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Politicians Unleashed? Political Communication on Twitter and in Parliament in Western Europe – Online Appendix

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EU Filter Terms

TABLE A.1 *List of EU Filter Terms*

Language	**Stems**
Danish	EU, europ, bryssel, bruxelles
German	EU, europ, brüssel
English	EU, europe , brussels
Spanish	UE, europ , bruselas
French	UE, europ , bruxelles
Italian	UE, europ , bruxelles
Swedish	EU, europ, bryssel
Twitter handles (included in all)	eu_commission, europarl_en, eucouncil, junckereu, eucopresident, ep_president, ep_presschulz, coe, aldeparty, europarlpress, europarl_fr, eurlex, eucourtpress, euauditors, euombudsman, eu_eeas, europarl_it, euatun, jmdbarroso, ecb, eucouncilpress, epp, eppgroup, theprogressives, pes_pse, aldegroup, guengl, greensep, ecrgroup, addeurope, enf_ep, enl_france, groupeenl, efdgroup

Descriptives of Data and Measurement

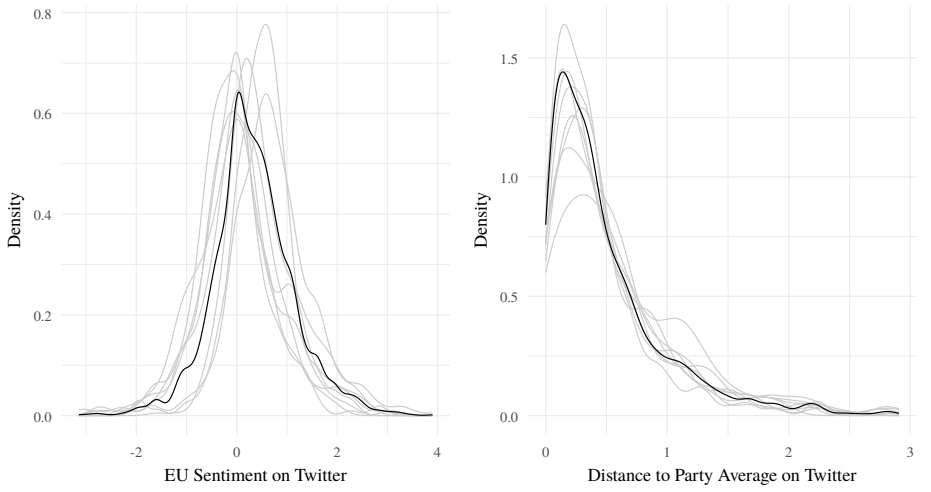

Figure A.1. Distribution of MPs' Twitter EU Sentiment and Distance to Party Average on Twitter
Note: Solid lines are the entire sample average, and gray lines indicate the distribution in individual countries.

TABLE A.2 *MPs whose EU sentiment on Twitter has distance to their parties' average above 2*

Country	Party	Name	EU sent.	Dist. to Party	Party Sent.
Denmark	DF	Dennis Flydtkjær	-2.71	2.75	0.04
France	LR	Didier Quentin	2.94	2.64	0.30
France	PCF	Jean-Paul Dufrègne	2.40	2.28	0.12
France	PS	Laurence Dumont	-1.95	2.19	0.25
France	LR	Michel Vialay	-1.95	2.25	0.30
France	LR	Nadia Ramassamy	-1.95	2.25	0.30
France	LREM	Philippe Chassaing	3.14	2.46	0.68
France	LR	Stéphane Viry	-1.95	2.25	0.30
Germany	FDP	Gero Clemens Hocker	-1.61	2.12	0.51
Germany	CDU	Jan Metzler	-1.10	2.18	1.08
Germany	AFD	Jens Maier	-1.73	2.12	0.38
Germany	FDP	Markus Herbrand	-1.61	2.12	0.51
Germany	SPD	Matthias Bartke	-1.95	2.84	0.89
Italy	LN	Andrea Giaccone	-1.95	2.20	0.26
Italy	FI	Cosimo Sibilia	3.14	2.83	0.31
Italy	PD	David Ermini	1.85	2.11	-0.26
Italy	PD	Francesca Bonomo	-3.14	2.87	-0.26
Italy	PD	Marca Francesca La	1.95	2.21	-0.26
Italy	M5S	Marta Grande	2.40	2.26	0.14
Italy	LN	Nicola Molteni	2.83	2.58	0.26
Italy	FI	Roberto Pella	2.40	2.09	0.31
Spain 1	PP	Alicia Sánchez-Camacho Pérez	-1.73	2.12	0.39
Spain 1	PODEMOS	Ana Belén Terrón Berbel	1.61	2.20	-0.60
Spain 1	PSOE	Gonzalo Palacín Guarné	-2.12	2.16	0.04
Spain 2	PP	José Luis Ayllón	2.83	2.78	0.06
Spain 2	PP	José María García Urbano	2.27	2.21	0.06
Spain 2	PSOE	Juan Luis Gordo	-2.83	2.90	0.07
Spain 2	PP	María Dolores Marcos Moyano	-2.40	2.45	0.06
Spain 2	PP	Mariano Rajoy	-2.20	2.25	0.06
Spain 2	PP	Rafael Merino	2.83	2.78	0.06
Sweden	M	Jenny Petersson	-2.20	2.22	0.02
Sweden	M	Lars-Arne Staxäng	2.20	2.18	0.02
Sweden	V	Momodou Jallow	-2.71	2.45	-0.25
Sweden	MP	Pernilla Stålhammar	2.46	2.17	0.29
UK	LAB	Cat Smith	2.83	2.58	0.25
UK	CONS	Chloe Smith	3.30	2.21	1.08
UK	LAB	Conor Mcginn	2.34	2.08	0.25
UK	LAB	Dan Jarvis	2.56	2.31	0.25
UK	CONS	George Hollingbery	3.22	2.13	1.08
UK	CONS	Richard Harrington	3.50	2.41	1.08
UK	CONS	Seema Kennedy	3.30	2.21	1.08
UK	CONS	Tracey Crouch	3.89	2.81	1.08

Notes: **EU Sent.** refers to the sentiment on EU tweets by that MP. **Party sent.** is the MP's party average sentiment on EU tweets.

TABLE A.3 *Most frequently used dictionary terms in Denmark*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
godt	133	skal	460	samarbejde	143	skal	386
helt	127	mod	164	hele	134	mod	66
tak	78	nej	87	godt	68	grænser	60
hele	76	imod	71	helt	60	imod	32
samarbejde	71	lidt	47	ønsker	49	lidt	28
bedre	61	ret	42	aftale	44	strid	27
ønsker	60	intet	41	giver	41	rettigheder	24
store	48	grænser	37	store	38	fald	24
enig	47	kæmpe	37	bedre	36	ret	21
løsning	44	stærkt	34	sikre	33	problem	21
sikre	41	udfordringer	34	støtte	27	udfordringer	20
klar	40	tale	32	fællesskab	26	tale	20
giver	39	tilbage	28	adgang	24	stærkt	18
håber	38	desværre	27	afgørende	23	tilbage	17
tillykke	35	svært	24	styrke	22	nej	16

TABLE A.4 *Most frequently used dictionary terms in France*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
merci	1,192	contre	1,319	justice	217	droit	448
travail	827	devons	785	bien	190	droits	222
grande	731	droit	735	partenaires	189	non	108
bien	564	défendre	542	engagements	148	contre	103
grand	484	non	490	notamment	133	chargée	77
forte	483	crise	426	résolution	120	devons	75
coopération	465	combat	401	applaudissements	106	contraire	56
protège	444	droits	385	coopération	96	particulier	50
sécurité	409	défis	325	or	87	défendre	47
notamment	388	lutte	324	respecter	75	déficit	38
paix	387	taxation	301	véritable	73	renforcer	34
protection	387	paris	297	forte	66	concerne	33
commune	380	retour	294	sécurité	63	problème	33
mieux	378	guerre	282	protection	62	dumping	30
belle	377	responsabilité	272	grande	58	particulièrement	28

TABLE A.5 *Most frequently used dictionary terms in Germany*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
gut	421	gegen	883	beifall	261	gegen	105
danke	369	grenze	144	gemeinsame	108	gegenüber	43
weiter	338	grenzen	144	gemeinsam	104	grenzen	36
gute	323	kämpfen	138	recht	91	stärker	35
gemeinsam	306	leider	134	zusammenarbeit	84	herausforderungen	30
lösung	249	zurück	125	sicherheit	78	stark	29
klar	214	folgen	100	stärken	76	problem	21
gemeinsame	205	nein	97	gemeinsamen	65	liegen	21
glückwunsch	204	kampf	88	gut	55	leider	21
starkes	188	stark	87	interesse	50	bedeutung	18
recht	187	herausforderungen	86	lösung	49	einsetzen	18
besser	184	sorgen	80	weiter	47	sorgen	17
wichtig	175	probleme	77	partner	46	kämpfen	17
starke	162	spiel	77	gilt	44	herausforderung	15
zusammenarbeit	159	problem	75	klar	42	lösen	15

TABLE A.6 *Most frequently used dictionary terms in Italy*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
grande	293	contro	543	applausi	77	diritti	47
grazie	263	manovra	417	rispetto	68	contro	46
bene	261	deficit	203	unione	41	confini	25
rispetto	172	problema	199	risoluzione	39	critiche	21
forza	162	debito	170	grande	38	diritto	15
avanti	152	diritti	168	partner	28	sanzioni	14
forte	148	crisi	135	bene	25	problema	14
primo	126	diritto	128	risorse	25	affrontare	13
destra	125	nulla	120	primo	20	manovra	13
amici	118	subito	103	forte	20	vincoli	13
libertà	112	colpa	97	unico	16	crisi	13
risposta	108	responsabilità	95	forza	15	guerra	12
vero	99	battaglia	92	vero	14	discussione	11
sicurezza	93	guerra	85	principio	13	problemi	11
difendere	91	rischio	81	sostenere	13	rischio	11

TABLE A.7 *Most frequently used dictionary terms in Spain 1*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
unión	242	no	967	unión	276	no	95
gracias	192	son	230	justicia	26	derechos	59
enhorabuena	147	trabajo	139	cumplir	19	muy	11
creación	135	muy	105	aplausos	11	son	10
justicia	119	derechos	98	creación	11	derecho	9
mejor	110	debe	94	bien	9	presupuesto	7
apoyo	104	crisis	93	compromiso	9	déficit	7
libertad	98	derecho	80	estabilidad	7	tiempo	5
bienestar	89	corrupción	65	verdad	6	víctimas	5
acuerdo	76	lucha	51	compromisos	6	desigualdad	5
valores	70	problema	50	resolución	5	lucha	5
igualdad	65	déficit	50	igualdad	5	pobreza	5
fuerte	60	corrupto	49	seguridad	5	evitar	4
seguridad	59	pasado	47	gracias	5	crisis	4
sociedad	55	presupuesto	47	alcanzar	5	debe	3

TABLE A.8 *Most frequently used dictionary terms in Spain 2*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
unión	447	no	2,502	unión	244	no	113
acuerdo	255	son	446	justicia	16	son	24
mejor	237	derechos	344	acuerdo	14	muy	14
gracias	228	muy	302	compromisos	10	problema	13
apoyo	220	debe	289	gracias	10	derechos	11
libertad	170	déficit	203	aplausos	10	déficit	11
cooperación	154	crisis	183	precisamente	9	debe	9
enhorabuena	152	trabajo	166	cumplir	8	pasado	8
igualdad	151	nada	158	cooperación	7	reto	5
justicia	148	presupuesto	127	creación	6	crisis	5
defender	134	problema	110	estabilidad	6	derecho	5
seguridad	125	lucha	101	mejor	6	precariedad	4
bien	117	responsabilidad	95	valores	6	veneno	4
valores	117	pasado	87	principios	5	sanciones	4
sociedad	114	tiempo	85	vive	5	tiempo	3

TABLE A.9 *Most frequently used dictionary terms in Sweden*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
bra	201	mot	287	samarbete	152	mot	291
rätt	107	ja	98	bra	150	rätten	143
samarbete	85	fel	64	beslut	103	olika	133
bättre	80	problem	50	rätt	89	väldigt	80
väl	55	trots	48	stor	85	ansvar	73
tack	54	olika	46	faktiskt	78	rättigheter	59
stöd	53	rättigheter	38	stöd	75	problem	51
avtal	46	ansvar	35	stärka	74	tyvärr	49
hjälp	44	tyvärr	32	bättre	71	trots	48
gärna	42	hårt	31	avtal	66	fast	39
stor	37	väldigt	28	säkerhet	66	gränser	36
beslut	37	hot	27	väl	61	grund	35
ger	36	fast	27	försvar	51	utmaningar	34
klart	32	rätten	24	ger	46	oerhört	31
intressant	30	bekämpa	23	möjlighet	43	kritik	28

TABLE A.10 *Most frequently used dictionary terms in the UK*

EU-related tweets				*Parliamentary speeches (5-words window)*			
Positive	Freq.	Negative	Freq.	Positive	Freq.	Negative	Freq.
agreement	1,488	against	900	agreement	287	against	59
good	1,285	hard	858	rights	275	lose	20
support	1,259	risk	417	partners	237	hard	17
right	1,179	bad	390	united	226	concern	16
like	1,083	worse	299	agreements	182	omit	16
rights	1,048	war	263	partnership	132	loss	15
great	843	breaking	256	right	127	criminal	15
better	733	wrong	232	ensure	109	war	14
best	715	lost	228	friends	102	worst	14
well	709	fight	220	well	94	problems	13
agree	481	lose	219	good	87	dependent	13
help	401	problem	204	agreed	87	opposition	13
thanks	396	damage	181	agree	83	problem	13
ensure	393	crisis	180	support	77	losing	13
protect	390	chaos	170	protection	58	dispute	12

Validation

We have validated our EU dictionary the following way: we have randomly sampled 100 tweets from members of each party which are flagged as mentioning Europe (or up to 100, in cases where party MPs did not tweet 100 times about Europe), leading up to 3,408 tweets. Then we had two student assistants code whether those tweets did mention Europe in a political way (1) or not (0). For tweets in languages they were not fluent, the coders were asked to automatically translate the text of the tweet, using Google Translate, before coding. The exact wording of the instruction was the following:

> We'd like you to code on the "Europe" column whether a tweet refers to the EU, one of its institutions, European integration, or a political idea of Europe in a broad sense. If yes, please enter a 1. If not, please enter a 0.
>
> For example, a tweet that says "Europe must stand strong in the face of challenges" is a 1. So is one that directly addresses any political actor at the EU level - say, the ECB, one of the EP party groups or their leaders, the Commission. It is also related to European integration if they are talking about an European-level policy as such, like Erasmus or the Dublin Regulation.

The coding proved to be challenging. Overall Krippendorff's alpha was $\alpha = 0.436$ between the two coders, in telling whether a tweet mentions Europe in a political sense or not. Of all 3408 tweets hand-coded, all of which were flagged as mentioning Europe by the dictionary, 1748 were considered to refer politically to Europe by both coders. Another 883 were considered to refer to Europe in a political way by at least one coder, and 777 were agreed by both to not refer politically to Europe. Table A.11 presents these results split by country. We see that, when it comes to intercoder reliability, the highest value

is found in French tweets, while the lowest is the UK. This indicates it is not an issue of automated translation – our coders were English and German speakers, but had to rely on Google Translate for French tweets. Regarding the false positives, those are a larger problem in France and Spain, where around 30% of tweets which our dictionary flagged as mentioning Europe were identified by both coders as not being so. This share is the smallest, below 20%, in Germany, UK, and Sweden.

TABLE A.11 *Agreement between coders by Country*

Country	Both coders 1	At least one coder 1	Both coders 0	Krippendorff alpha
Denmark	0.516	0.258	0.226	0.438
Germany	0.58	0.245	0.175	0.414
UK	0.576	0.291	0.133	0.277
Spain	0.42	0.253	0.327	0.491
France	0.495	0.204	0.301	0.577
Italy	0.439	0.316	0.245	0.344
Sweden	0.558	0.255	0.187	0.41

We investigate the impact of this misclassification on our measures in Figures A.2 and A.3. We have computed the average party sentiment on tweets which both coders' hand-validation indicated referred to Europe, and correlated it with the average party EU sentiment used in the paper, calculated on all tweets flagged by the dictionary as mentioning Europe. We mostly observe a high and positive correlation between these measures (Figure A.2).

Next, we calculated the sentiment in those tweets which both coders considered not to refer to Europe, and correlated with the same average party EU sentiment as before (Figure A.3). The correlation in some cases is smaller, but still positive and strong in five of seven countries (with the exceptions of Sweden and Denmark). This indicates two things: first, the measurement error caused by false positives is not random. If it were, we would expect a correlation of zero between sentiment measured in these tweets and

that measured on the EU tweets. However, we know that our sentiment measure does not capture only EU position, but also style and tone – for example, parties in government are generally more positive. For this reason we control for overall sentiment on Twitter (on non-EU tweets) in all models where Twitter EU sentiment, so that this variance explained by personal/partisan style is accounted for, and only the position element of sentiment remains.

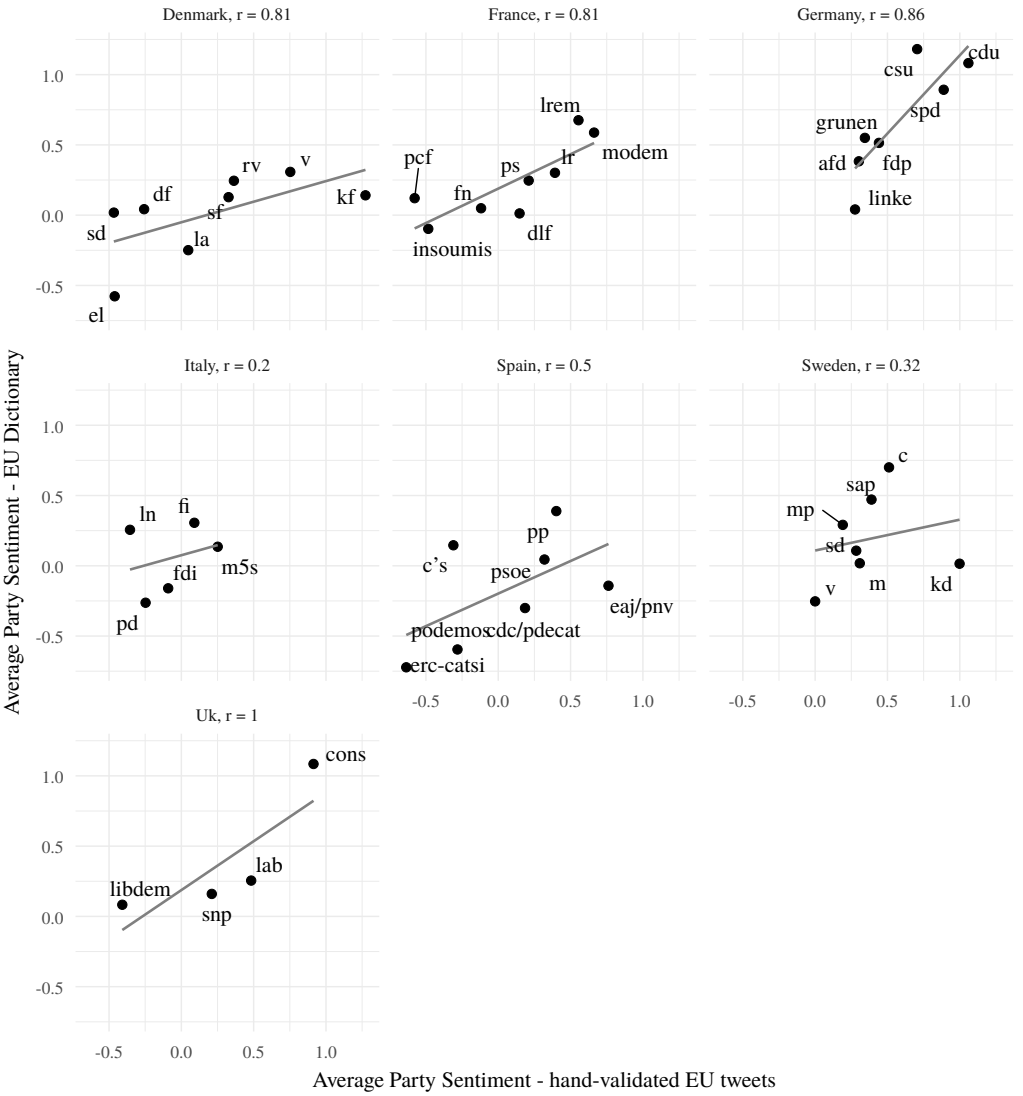

Figure A.2. Correlation between average party Twitter sentiment calculated from all EU-identified tweets and hand-coded EU tweets

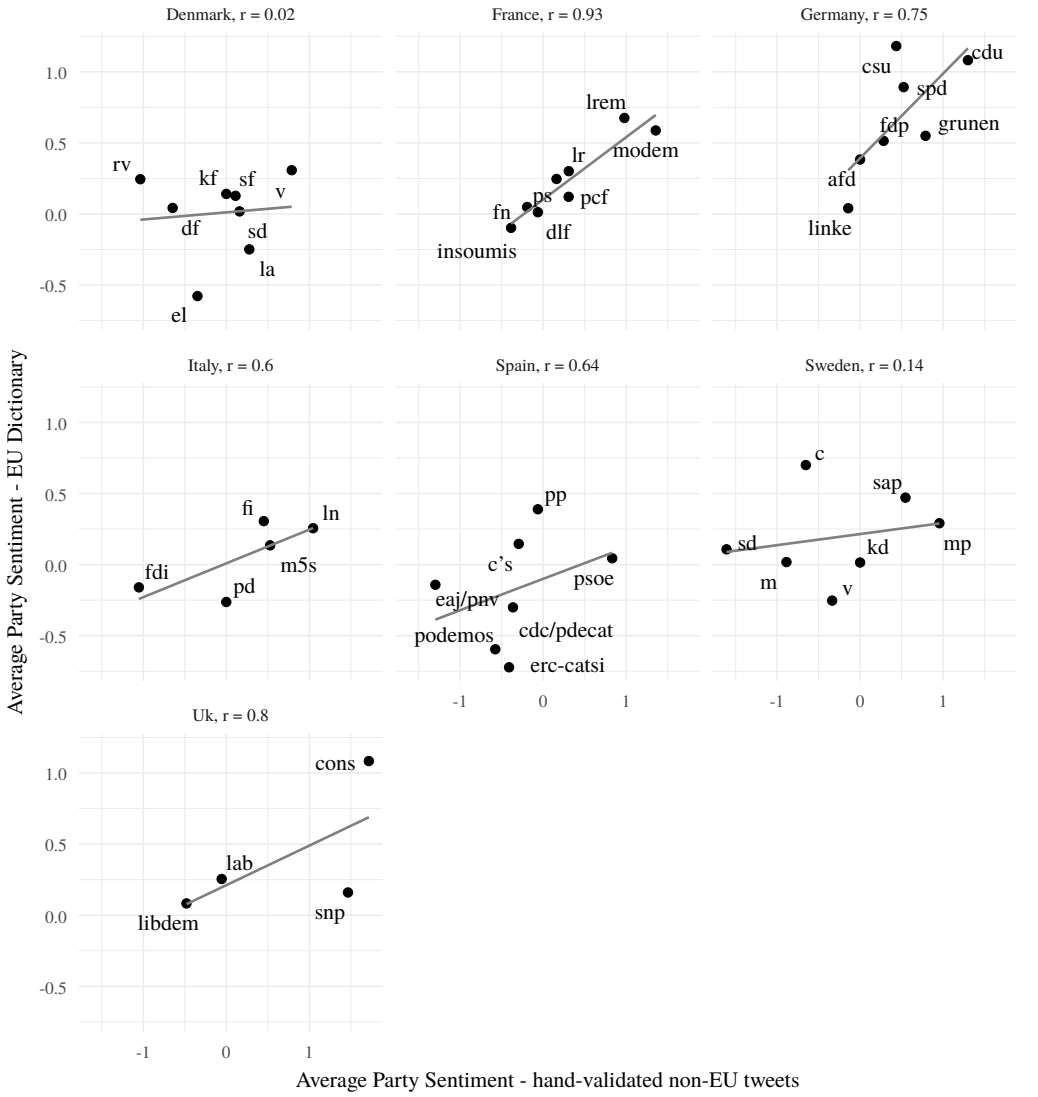

Figure A.3. Correlation between average party Twitter sentiment calculated from all EU-identified tweets and hand-coded non-EU tweets

For Germany and the UK, we had students then code 20 original tweets per party, on on a 1–5 Euroscepticism scale. The wording of the instructions was: *"On a scale where 1 represents a very Europhile position, 3 is neutral, and 5 is a very Eurosceptic position, where would you place the idea conveyed by this tweet? Here, Euroscepticism is broadly defined as aversion towards EU institutions and (further) EU integration."* Krippendorff's alpha was 0.60 for both countries. An example of a tweet that has been classified as Eurosceptic by the student coders and by the sentiment approach (sentiment = −1.61) is from an MP from the Left Party, the second most Eurosceptic party in the German parliament according to the Chapel Hill expert survey:

> *The exciting question is why the pro-EU parties have become so completely unpopular and absolutely incapable of regeneration. Populists are not the first problem. The current constitution of the EU and the rotting state of its elites are the primary cause of its disintegration.* – Tweet by Thomas Nord, German MP (The Left), on May 18, 2018 (translated by the authors)

The average sentiment in Nord's tweets is 0.31, higher than the average in his Euroskeptic Left party (0.09), but lower than the average sentiment by German MPs of 0.70. We point out, however, that ultimately our sentiment analysis takes place at a higher level of aggregation: at the MP level, not at the level of the individual tweet. Our goal is not to explain the tone of individual tweets of MPs, but rather the tone of MPs generally. In fact, aggregating the tweets belonging to the same MPs in the coding exercise, to get an MP level estimate, increases the correlation to $r = -.41$. For the UK, on the other hand, the confusion between sentiment and government status appears also in the hand coding: the correlation between sentiment estimates and students' assessment of Euroskepticism of tweets is $r = 0.04$, showing that there is more noise at capturing MPs' EU position there.

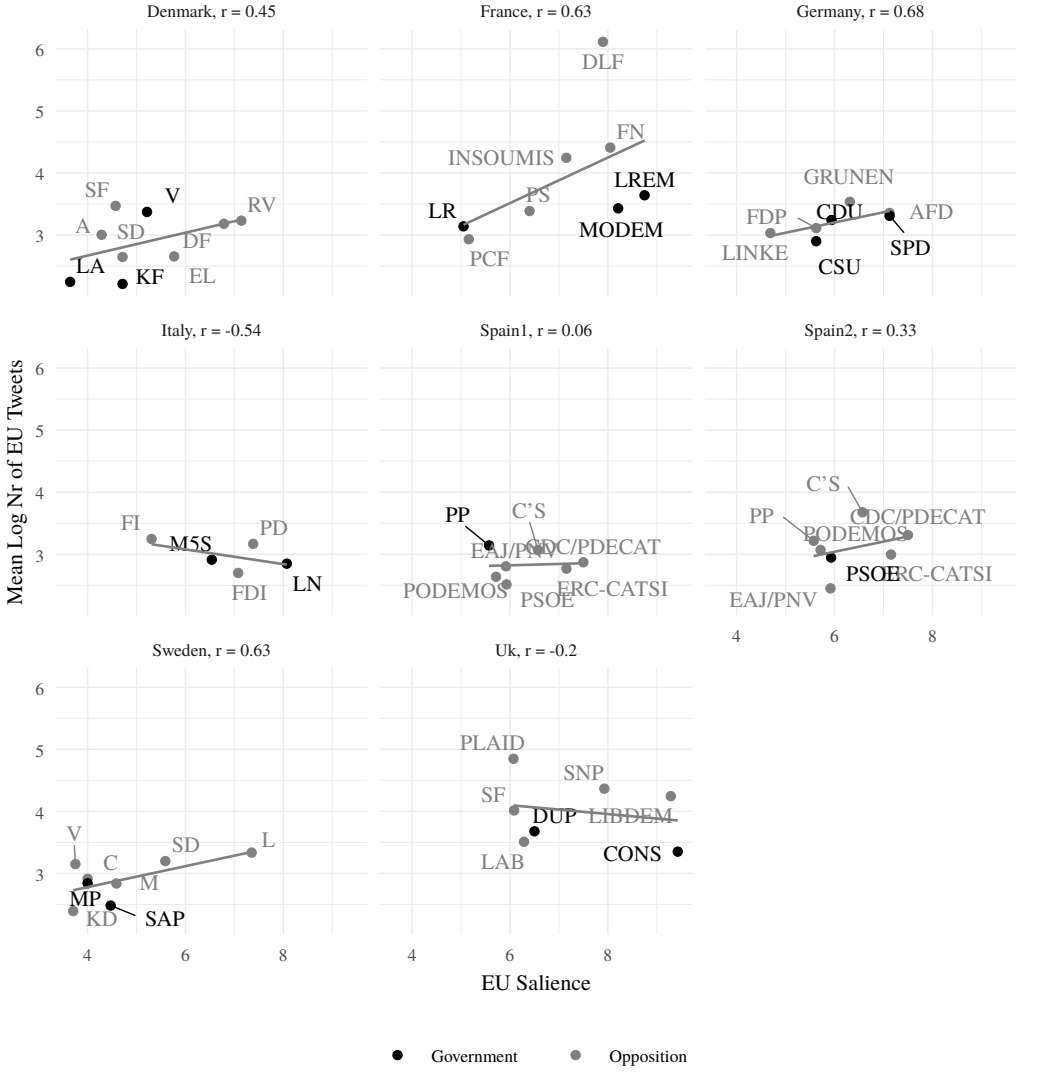

Figure A.4. EU Salience (CHES) and Mean Log Number of EU Tweets by Parties' MPs and Countries

Figure A.5. EU Position (CHES) and EU Sentiment in Parliament by Parties and Countries

Alternative Specifications

TABLE A.12 *Twitter as an Amplifier: Models re-weighing observations*

	DV: EU Sentiment on Twitter		*DV: No. of EU Tweets*	
	Model 1	Model 2	Model 3	Model 4
Intercept	−.47*	−.43*	−2.93*	−2.79*
	[−.70; −.25]	[−.69; −.18]	[−3.30; −2.55]	[−3.17; −2.42]
EU position	.04*	.04*	.03	.04*
	[.01; .07]	[.01; .07]	[−.00; .06]	[.00; .07]
Sentiment overall	.51*	.45*		
	[.37; .66]	[.30; .61]		
Terms in office	.01	−.00	.04*	.03*
	[−.01; .03]	[−.03; .02]	[.01; .07]	[.00; .06]
Male	−.02	−.00	.20*	.17*
	[−.09; .04]	[−.08; .08]	[.12; .28]	[.09; .25]
Cabinet experience	.02	.07	.07	.01
	[−.08; .12]	[−.04; .17]	[−.02; .16]	[−.08; .09]
Party leader	.05	.04	.21*	.10
	[−.10; .19]	[−.10; .18]	[.03; .40]	[−.08; .29]
Party in government	.14*	.21*	.02	.00
	[.05; .23]	[.12; .30]	[−.12; .15]	[−.14; .15]
Seat share	.17	.13	−.52*	−.25
	[−.22; .57]	[−.21; .47]	[−.94; −.11]	[−.68; .17]
Party Left-right	.03*	.02*	−.00	.00
	[.01; .05]	[.00; .04]	[−.02; .02]	[−.02; .02]
UK	.57*			
	[.28; .86]			
UK * Eu position	−.09*	−.08*		
	[−.15; −.04]	[−.13; −.03]		
EU Sentiment (Parl)		.07*		
		[.03; .11]		
EU salience			.14*	.13*
			[.09; .19]	[.08; .18]
N. Tweets (log)			.74*	.72*
			[.68; .79]	[.67; .77]
N. of EU Speeches				.17*
				[.14; .21]
Adj. R^2	.27	.31	.75	.76
Num. obs.	2366	1720	2645	2645
N Clusters	48	48	48	48

* Null hypothesis value outside the confidence interval. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. **EU position:** Party position on European integration (CHES); **Sentiment overall**: sentiment on all other tweets not mentioning Europe; **EU Sentiment (Parl)**: MPs' sentiment around Europe-related keywords in their parliamentary speeches; **EU salience:** party salience of European integration (CHES); **N. of EU speeches**: number of speeches in parliament by the MP mentioning Europe; **N. all tweets (log)**: number of tweets sent by the MP in 2018; **Terms in office:** number of terms served by the MP in parliament; **Cabinet experience:** whether the MP was ever a cabinet member; **Party leader:** whether the MP is party leader; **Party in government:** whether the party is part of the governing coalition; **Seat share:** party seat share in parliament; **Party left-right:** party position on the general left-right scale (CHES). Observations are weighed by the inverse of the country proportion in the data.

TABLE A.13 *Twitter as a Substitute Channel: Models re-weighing observations*

	Distance to average party EU sentiment (Twitter)		*EU Sentiment in Parliament*	
	Model 5	Model 6	Model 7	Model 8
Intercept	.20*	.21*	−.19	−.15
	[.08; .33]	[.08; .34]	[−.45; .07]	[−.40; .09]
EU Dissent	.03*	.03*		
	[.02; .04]	[.02; .04]		
Distance to party	.37*	.36*		
(Twitter non-EU)	[.24; .50]	[.23; .49]		
Terms in office	.01	.01	−.01	−.01
	[−.01; .02]	[−.01; .02]	[−.04; .01]	[−.03; .01]
Male	−.02	−.01	.04	.04
	[−.07; .03]	[−.06; .04]	[−.09; .17]	[−.09; .17]
Cabinet experience	−.06	−.04	.01	.00
	[−.12; .01]	[−.10; .03]	[−.18; .20]	[−.18; .19]
Party leader	−.05	−.03	−.03	−.04
	[−.13; .02]	[−.10; .05]	[−.34; .28]	[−.35; .28]
Party in government	.04	.04	.14*	.12*
	[−.02; .10]	[−.02; .10]	[.03; .26]	[.01; .23]
Seat share	.15	.10	.08	.01
	[−.05; .36]	[−.11; .31]	[−.37; .53]	[−.42; .44]
EU position	−.00	−.00	.04*	.04*
	[−.02; .01]	[−.02; .01]	[.01; .08]	[.01; .07]
Party left-right	.02*	.02*	.03*	.02
	[.01; .03]	[.01; .03]	[.00; .05]	[−.00; .04]
N. of EU speeches		−.04*		
		[−.06; −.02]		
EU Sentiment (Tw)			.17*	.32*
			[.09; .25]	[.20; .44]
EU Distance to party (Tw)			.05	.09
			[−.05; .15]	[−.02; .20]
EU Sentiment (Tw) *				−.12*
EU distance to party (Tw)				[−.20; −.03]
Adj. R^2	.07	.07	.09	.10
Num. obs.	2366	2366	1720	1720
N Clusters	48	48	48	48

* 0 outside the confidence interval. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. **EU Dissent:** how unified the party is on the EU (CHES); **Distance to party (Twitter, non-EU):** distance to average party sentiment on Twitter on tweets not mentioning Europe; **N. of EU speeches**: number of speeches in parliament by the MP mentioning Europe; **EU sentiment (Tw)**: Sentiment on tweets related to Europe; **EU Distance to party (Tw):** MPs' distance to party average sentiment on Europe-related tweets; **EU position:** Party position on European integration (CHES);**Terms in office:** number of terms served by the MP in parliament; **Cabinet experience:** whether the MP was ever a cabinet member; **Party leader:** whether the MP is party leader; **Party in government:** whether the party is part of the governing coalition; **Seat share:** party seat share in parliament; **Party left-right:** party position on the general left-right scale (CHES).

TABLE A.14 *Twitter as an Amplifier Channel – Excluding the UK*

	DV: EU Sentiment on Twitter		*DV: No. of EU Tweets*	
	Model 1	Model 2	Model 3	Model 4
Intercept	−.50*	−.44*	−2.96*	−2.87*
	[−.75; −.24]	[−.71; −.17]	[−3.37; −2.55]	[−3.28; −2.46]
EU position	.04*	.03*	.01	.02
	[.00; .07]	[.00; .06]	[−.02; .04]	[−.01; .05]
Sentiment overall	.44*	.37*		
	[.28; .61]	[.19; .55]		
Terms in office	.01	.00	.04*	.03
	[−.02; .04]	[−.03; .04]	[.01; .07]	[−.00; .06]
Male	−.01	.02	.15*	.11*
	[−.08; .06]	[−.06; .09]	[.06; .24]	[.03; .20]
Cabinet experience	.06	.10	.07	.00
	[−.05; .17]	[−.03; .23]	[−.03; .17]	[−.08; .08]
Party leader	.01	−.00	.21*	.12
	[−.12; .15]	[−.15; .14]	[.03; .38]	[−.05; .30]
Party in government	.16*	.24*	.02	.02
	[.07; .26]	[.15; .34]	[−.13; .16]	[−.13; .17]
Seat share	.23	.12	−.28	−.04
	[−.16; .62]	[−.18; .43]	[−.67; .11]	[−.45; .37]
Party Left-right	.03*	.02*	.00	.01
	[.00; .05]	[.00; .05]	[−.02; .02]	[−.01; .03]
EU Sentiment (Parl)		.07*		
		[.02; .12]		
EU salience			.14*	.14*
			[.09; .20]	[.09; .19]
N. Tweets (log)			.75*	.73*
			[.70; .80]	[.68; .78]
N. of EU Speeches				.17*
				[.13; .20]
Adj. R^2	.25	.28	.77	.78
Num. obs.	1888	1307	2146	2146
N Clusters	42	42	42	42

* 0 outside the confidence interval. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. **EU position:** Party position on European integration (CHES); **Sentiment overall**: sentiment on all other tweets not mentioning Europe; **EU Sentiment (Parl)**: MPs' sentiment around Europe-related keywords in their parliamentary speeches; **EU salience:** party salience of European integration (CHES); **N. of EU speeches**: number of speeches in parliament by the MP mentioning Europe; **N. all tweets (log)**: number of tweets sent by the MP in 2018; **Terms in office:** number of terms served by the MP in parliament; **Cabinet experience:** whether the MP was ever a cabinet member; **Party leader:** whether the MP is party leader; **Party in government:** whether the party is part of the governing coalition; **Seat share:** party seat share in parliament; **Party left-right:** party position on the general left-right scale (CHES).

TABLE A.15 *Twitter as a Substitute Channel – Excluding the UK*

	DV: Distance to average party EU sentiment (Twitter)		*DV: EU Sentiment in Parliament*	
	Model 5	Model 6	Model 7	Model 8
Intercept	.24*	.26*	−.20	−.16
	[.09; .40]	[.10; .42]	[−.47; .07]	[−.41; .09]
EU Dissent	.03*	.02*		
	[.01; .04]	[.01; .04]		
Distance to party	.33*	.33*		
on Twitter (non-EU)	[.20; .47]	[.19; .46]		
Terms in office	.00	.00	−.02	−.02
	[−.02; .02]	[−.02; .03]	[−.05; .01]	[−.05; .02]
Male	.00	.02	.00	.01
	[−.04; .05]	[−.03; .06]	[−.11; .11]	[−.10; .12]
Cabinet experience	−.07	−.05	.01	.00
	[−.14; .00]	[−.11; .02]	[−.16; .18]	[−.17; .17]
Party leader	−.09*	−.06	−.05	−.05
	[−.16; −.01]	[−.13; .01]	[−.39; .28]	[−.39; .28]
Party in government	.02	.02	.14*	.12
	[−.04; .08]	[−.04; .08]	[.02; .27]	[−.01; .24]
Seat share	.16	.09	−.04	−.09
	[−.12; .45]	[−.19; .38]	[−.59; .51]	[−.61; .43]
EU position	−.00	−.00	.07*	.06*
	[−.02; .02]	[−.02; .01]	[.03; .10]	[.03; .09]
Party left-right	.02*	.02*	.02	.01
	[.01; .03]	[.00; .03]	[−.01; .04]	[−.01; .04]
N. of EU speeches		−.05*		
		[−.06; −.03]		
EU Sentiment (Tw)			.15*	.32*
			[.05; .24]	[.16; .47]
EU Distance to party (Tw)			.05	.09
			[−.06; .16]	[−.02; .20]
EU Sentiment (Tw) *				−.14*
EU distance to party (Tw)				[−.23; −.04]
Adj. R^2	.05	.06	.07	.08
Num. obs.	1888	1888	1307	1307
N Clusters	42	42	42	42

* 0 outside the confidence interval. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. **EU Dissent:** how unified the party is on the EU (CHES); **Distance to party (Twitter, non-EU):** distance to average party sentiment on Twitter on tweets not mentioning Europe; **N. of EU speeches**: number of speeches in parliament by the MP mentioning Europe; **EU sentiment (Tw)**: Sentiment on tweets related to Europe; **EU Distance to party (Tw):** MPs' distance to party average sentiment on Europe-related tweets; **EU position:** Party position on European integration (CHES);**Terms in office:** number of terms served by the MP in parliament; **Cabinet experience:** whether the MP was ever a cabinet member; **Party leader:** whether the MP is party leader; **Party in government:** whether the party is part of the governing coalition; **Seat share:** party seat share in parliament; **Party left-right:** party position on the general left-right scale (CHES).

TABLE A.16 *Twitter as an Amplifier Channel – Excluding MPs with fewer than 5 EU tweets*

	DV: EU Sentiment on Twitter		*DV: No. of EU Tweets*	
	Model 1	Model 2	Model 3	Model 4
Intercept	−.39*	−.32*	−2.99*	−2.89*
	[−.57; −.20]	[−.52; −.12]	[−3.52; −2.47]	[−3.41; −2.36]
EU position	.03*	.02	.03	.04*
	[.01; .06]	[−.01; .05]	[−.00; .06]	[.00; .07]
Sentiment overall	.72*	.66*		
	[.59; .85]	[.50; .81]		
Terms in office	.01	.01	.06*	.05*
	[−.00; .03]	[−.00; .03]	[.02; .09]	[.02; .08]
Male	−.04	−.03	.15*	.13*
	[−.10; .02]	[−.10; .03]	[.08; .23]	[.05; .20]
Cabinet experience	−.02	−.00	.09	.01
	[−.11; .06]	[−.09; .09]	[−.01; .19]	[−.08; .10]
Party leader	.07	.05	.08	−.03
	[−.02; .16]	[−.08; .17]	[−.09; .25]	[−.21; .16]
Party in government	.13*	.15*	.04	.04
	[.07; .19]	[.08; .22]	[−.10; .18]	[−.11; .19]
Seat share	.03	.09	−.64*	−.45*
	[−.25; .30]	[−.15; .34]	[−1.02; −.27]	[−.82; −.07]
Party Left-right	.03*	.02*	.01	.01
	[.01; .05]	[.01; .04]	[−.01; .03]	[−.01; .04]
UK	.37*	.24*		
	[.17; .57]	[.02; .47]		
UK * Eu position	−.08*	−.06*		
	[−.12; −.04]	[−.10; −.02]		
EU Sentiment (Parl)		.06*		
		[.02; .09]		
EU salience			.12*	.11*
			[.08; .16]	[.07; .15]
N. Tweets (log)			.80*	.79*
			[.74; .86]	[.73; .84]
N. of EU Speeches				.15*
				[.11; .19]
Adj. R^2	.45	.45	.62	.64
Num. obs.	1901	1425	1901	1901
N Clusters	48	48	48	48

* 0 outside the confidence interval. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. **EU position:** Party position on European integration (CHES); **Sentiment overall**: sentiment on all other tweets not mentioning Europe; **EU Sentiment (Parl)**: MPs' sentiment around Europe-related keywords in their parliamentary speeches; **EU salience:** party salience of European integration (CHES); **N. of EU speeches**: number of speeches in parliament by the MP mentioning Europe; **N. all tweets (log)**: number of tweets sent by the MP in 2018; **Terms in office:** number of terms served by the MP in parliament; **Cabinet experience:** whether the MP was ever a cabinet member; **Party leader:** whether the MP is party leader; **Party in government:** whether the party is part of the governing coalition; **Seat share:** party seat share in parliament; **Party left-right:** party position on the general left-right scale (CHES).

TABLE A.17 *Twitter as a Substitute Channel – Excluding MPs with fewer than 5 EU Tweets*

	DV: Distance to average party EU sentiment (Twitter)		*DV: EU Sentiment in Parliament*	
	Model 5	Model 6	Model 7	Model 8
Intercept	.08	.09	−.21	−.18
	[−.02; .19]	[−.03; .20]	[−.48; .07]	[−.45; .09]
EU Dissent	.02*	.02*		
	[.01; .03]	[.01; .03]		
Distance to party	.38*	.38*		
(Twitter, non-EU)	[.28; .48]	[.28; .48]		
Terms in office	.00	.00	−.02	−.02
	[−.01; .02]	[−.01; .02]	[−.05; .00]	[−.04; .01]
Male	.00	.00	.07	.07
	[−.04; .04]	[−.04; .05]	[−.08; .23]	[−.08; .23]
Cabinet experience	−.03	−.02	.06	.05
	[−.09; .02]	[−.08; .03]	[−.12; .24]	[−.13; .22]
Party leader	−.03	−.02	−.01	−.02
	[−.09; .03]	[−.08; .04]	[−.31; .28]	[−.32; .28]
Party in government	.03	.03	.13*	.10
	[−.01; .07]	[−.02; .07]	[.01; .24]	[−.02; .22]
Seat share	.13*	.11	−.06	−.12
	[.02; .23]	[−.00; .21]	[−.54; .42]	[−.57; .33]
EU position	−.00	−.00	.05*	.04*
	[−.01; .01]	[−.01; .01]	[.02; .07]	[.02; .06]
Party left-right	.02*	.02*	.04*	.03*
	[.01; .03]	[.01; .03]	[.02; .06]	[.01; .05]
N. of EU speeches		−.02*		
		[−.03; −.00]		
EU Sentiment (Tw)			.25*	.39*
			[.17; .33]	[.27; .52]
EU Distance to party (Tw)			−.03	.08
			[−.18; .13]	[−.09; .25]
EU Sentiment (Tw) *				−.13*
EU distance to party (Tw)				[−.21; −.06]
Adj. R^2	.09	.09	.10	.11
Num. obs.	1901	1901	1425	1425
N Clusters	48	48	48	48

* 0 outside the confidence interval. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. **EU Dissent:** how unified the party is on the EU (CHES); **Distance to party (Twitter, non-EU):** distance to average party sentiment on Twitter on tweets not mentioning Europe; **N. of EU speeches**: number of speeches in parliament by the MP mentioning Europe; **EU sentiment (Tw)**: Sentiment on tweets related to Europe; **EU Distance to party (Tw):** MPs' distance to party average sentiment on Europe-related tweets; **EU position:** Party position on European integration (CHES);**Terms in office:** number of terms served by the MP in parliament; **Cabinet experience:** whether the MP was ever a cabinet member; **Party leader:** whether the MP is party leader; **Party in government:** whether the party is part of the governing coalition; **Seat share:** party seat share in parliament; **Party left-right:** party position on the general left-right scale (CHES).

Country Results

TABLE A.18 *Predictors of EU Sentiment in Parliamentary Speeches by Country*

	DEN	FRA	GER	ITA	ES 1	ES 2	SWE	UK
Intercept	−.05	−.06	−.73	1.57	.92	−.38	−.10	−.41
	[−1.82; 1.73]	[−2.32; 2.21]	[−3.68; 2.22]	[−.02; 3.16]	[−8.69; 10.54]	[−6.54; 5.79]	[−2.18; 1.97]	[−8.59; 7.77]
EU Sentiment (Tw)	.06	.34	.54	.15	.70*	−.04	.11	.43
	[−.70; .82]	[−.29; .97]	[−.11; 1.19]	[−.60; .90]	[.19; 1.21]	[−.93; .86]	[−.49; .71]	[−.09; .96]
Distance to party (Tw)	.04	.05	.30*	−.04	.21	.18	.19	.07
	[−.49; .58]	[−.24; .34]	[.11; .50]	[−.88; .80]	[−.03; .46]	[−.79; 1.14]	[−.16; .54]	[−1.14; 1.28]
Terms in office	.05	−.01	.02	.02	−.05	−.02	.02	−.03
	[−.09; .19]	[−.15; .13]	[−.29; .33]	[−.08; .13]	[−.30; .20]	[−.22; .18]	[−.10; .13]	[−.15; .10]
Male	−.14	−.01	.08	.19	.31	−.12	−.26	.34
	[−.58; .29]	[−.38; .35]	[−.32; .47]	[−.03; .40]	[−.66; 1.28]	[−.60; .37]	[−.77; .24]	[−.11; .79]
Cabinet experience	−.04	.11	.06	.05	.12	.59*	−.17	.11
	[−1.11; 1.03]	[−.67; .89]	[−.24; .36]	[−.67; .76]	[−1.53; 1.76]	[.18; .99]	[−.52; .17]	[−1.48; 1.70]
Party in government	−.30	.34	−.20	.23	.29	.00	.26	.18
	[−1.10; .50]	[−2.16; 2.84]	[−1.06; .67]	[−.09; .55]	[−15.78; 16.36]	[−1.48; 1.49]	[−.95; 1.46]	[−12.48; 12.84]
Seat share	−.72	−.26	.54	−3.28*	−1.65	1.02	.03	.61
	[−3.68; 2.23]	[−7.53; 7.00]	[−9.12; 10.20]	[−4.75; −1.81]	[−45.64; 42.34]	[−1.73; 3.76]	[−7.50; 7.55]	[−6.99; 8.20]
Party left-right	.10	−.02	.04	−.13	−.00	−.07	.05	.02
	[−.05; .24]	[−.22; .17]	[−.20; .28]	[−.28; .02]	[−2.58; 2.58]	[−.59; .45]	[−.24; .34]	[−2.40; 2.45]
EU-position	−.01	.06	.14	−.05	−.07	.14	−.00	.12
	[−.28; .26]	[−.28; .39]	[−.30; .59]	[−.16; .06]	[−4.68; 4.54]	[−1.63; 1.91]	[−.35; .34]	[−.48; .72]
EU Sentiment *	.03	−.17	−.23	−.12	−.21	.19	.03	−.13
Distance to party (Tw)	[−.75; .81]	[−.60; .25]	[−.59; .13]	[−.62; .37]	[−.63; .21]	[−1.25; 1.64]	[−.42; .47]	[−.55; .30]
Adj. R^2	−.08	.05	.12	−.04	.05	−.08	.02	.12
Num. obs.	72	391	279	180	126	92	167	413
N Clusters	9	8	7	5	7	7	8	6

Note: * 0 outside the 95% confidence interval. Robust standard errors clustered by party.

Models with Different Windows for Parliament EU Sentiment

TABLE A.19 *Twitter as a Substitute Channel: Models with different windows for estimating EU sentiment in parliamentary speeches*

	15-words windows		*30-words windows*	
	Model 7.1	Model 8.1	Model 7.2	Model 8.2
Intercept	−.13	−.11	−.08	−.07
	[−.35; .10]	[−.34; .12]	[−.33; .16]	[−.32; .18]
EU Sentiment (Tw)	.11*	.20*	.11*	.19*
	[.03; .19]	[.10; .29]	[.03; .19]	[.10; .27]
EU Distance to party (Tw)	.02	.05	.00	.03
	[−.09; .13]	[−.06; .17]	[−.08; .09]	[−.05; .12]
Terms in office	−.02*	−.02*	−.02*	−.02*
	[−.04; −.01]	[−.04; −.01]	[−.04; −.01]	[−.03; −.01]
Male	.06	.06	.06	.06
	[−.04; .16]	[−.03; .16]	[−.04; .17]	[−.04; .17]
Cabinet experience	−.00	−.01	.02	.01
	[−.12; .11]	[−.12; .11]	[−.09; .13]	[−.09; .12]
Party leader	−.06	−.06	−.00	−.00
	[−.27; .16]	[−.27; .16]	[−.17; .16]	[−.17; .16]
Party in government	.14	.12	.19*	.17*
	[−.00; .28]	[−.01; .26]	[.05; .33]	[.04; .31]
Seat share	.41	.38	.39	.36
	[−.02; .85]	[−.05; .81]	[−.07; .85]	[−.10; .82]
Party left-right	.03*	.03*	.03*	.03*
	[.01; .06]	[.00; .05]	[.01; .06]	[.01; .05]
EU position	.05*	.05*	.04*	.04*
	[.02; .08]	[.02; .08]	[.01; .07]	[.01; .07]
EU Sentiment (Tw) *		−.07*		−.06*
EU distance to party (Tw)		[−.12; −.01]		[−.11; −.01]
Adj. R^2	.17	.17	.24	.24
Num. obs.	1720	1720	1720	1720
N Clusters	48	48	48	48

* Null hypothesis value outside the confidence interval.. Robust standard errors clustered at the party level. Legislature-dummy fixed effects included but not reported here. Models 7.1 and 8.1 have as dependent variable the EU sentiment in parliament estimated based on 15 words before and after the EU-related keyword. Models 8.1 and 8.2 estimate EU sentiment in parliament with 30 words before and after the occurrance of the EU related keyword.

Regression Diagnostics

The next pages contain the regression diagnostics plot for all eight models reported in the paper. We must note, however, that while these are based on models with robust standard errors and with legislature fixed effects, they do not include the clustering of standard errors at the party level into account, since diagnostics for such models are not offered by current statistical software. The plots were obtained with the R package `robustbase` (Todorov and Filzmoser 2009).

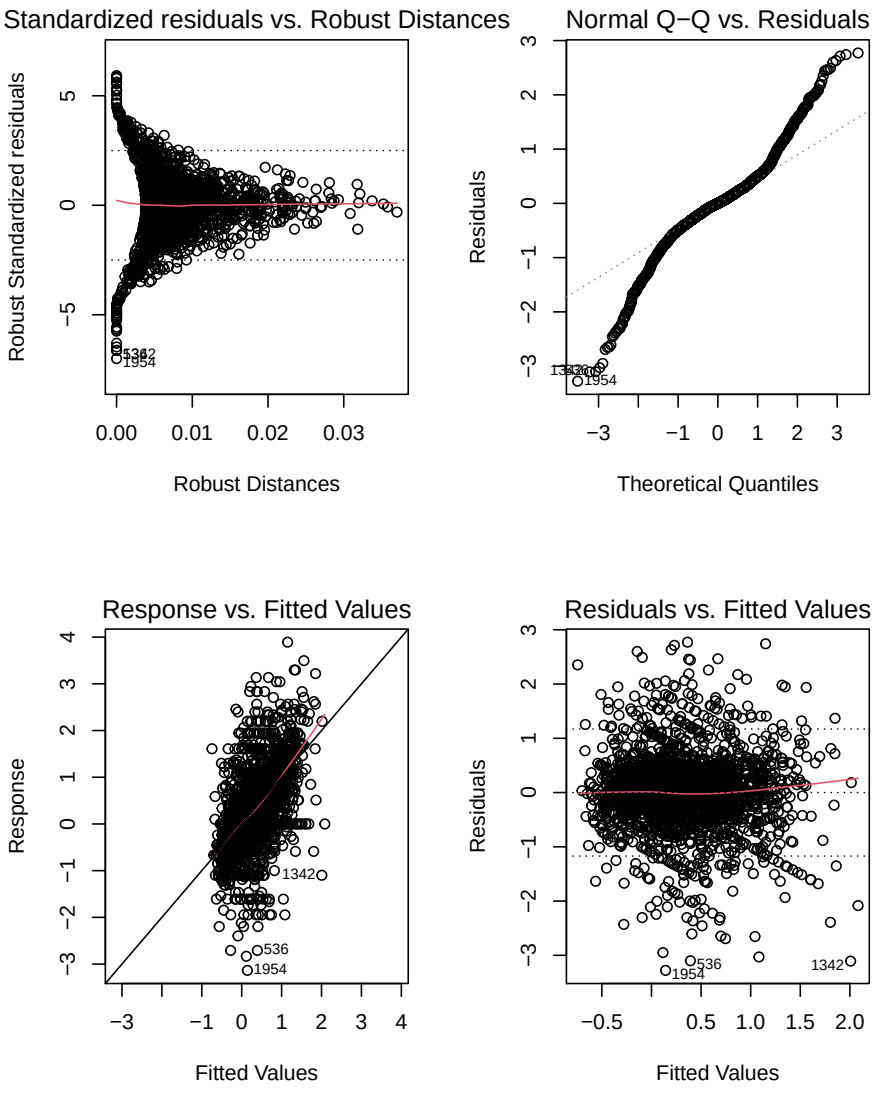

Figure A.6. Regression diagnostics for Model 1 from Table 2

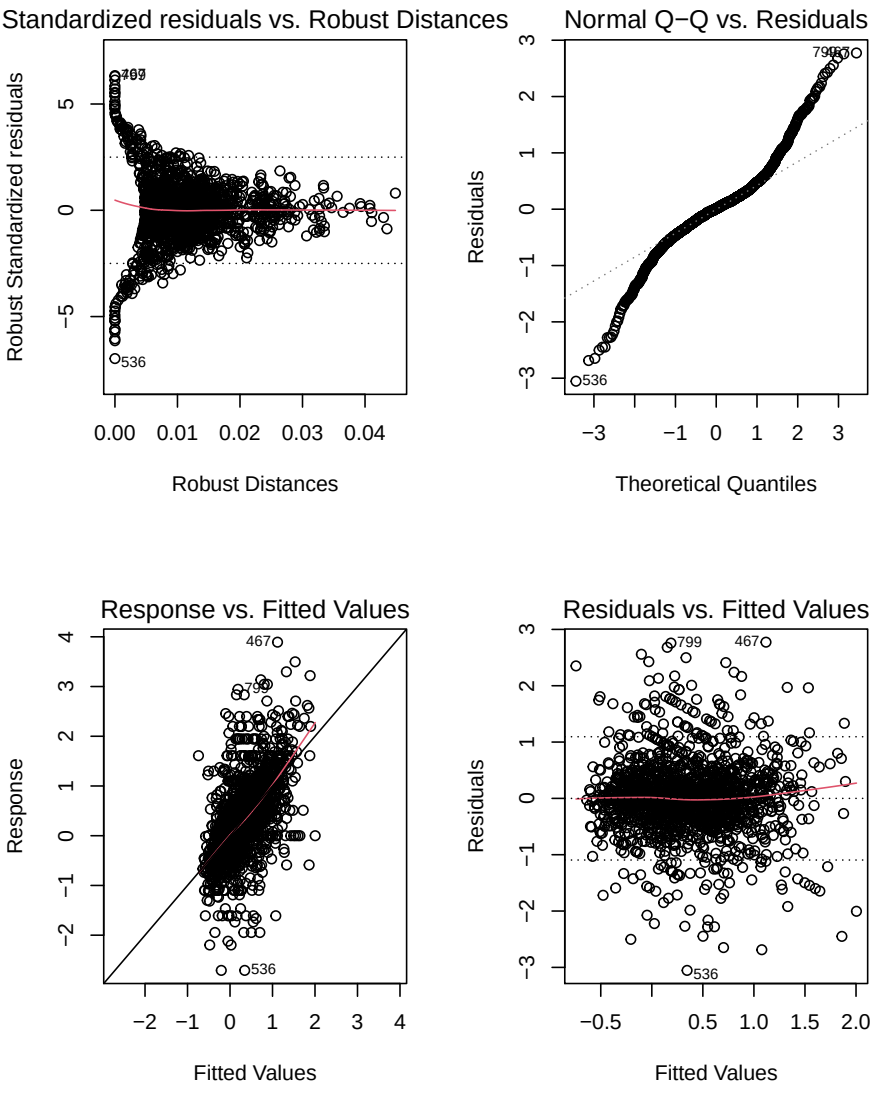

Figure A.7. Regression diagnostics for Model 2 from Table 2

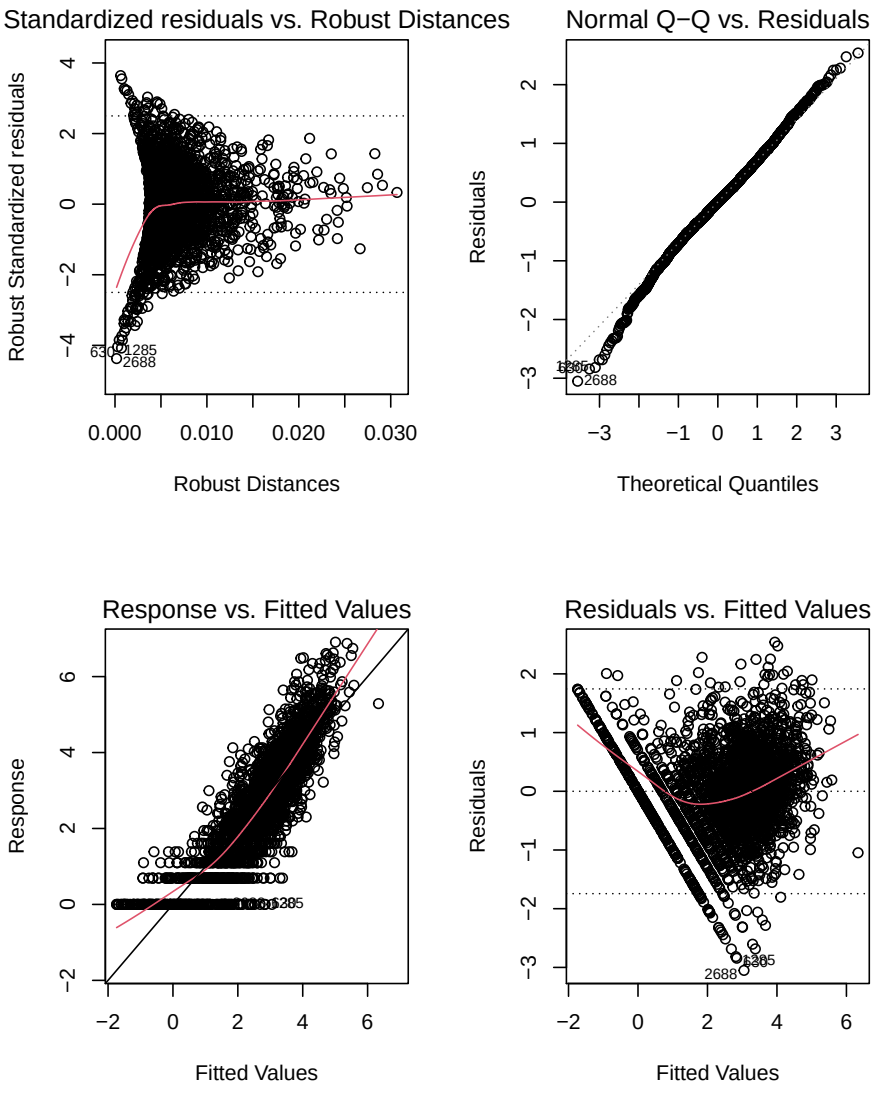

Figure A.8. Regression diagnostics for Model 3 from Table 2

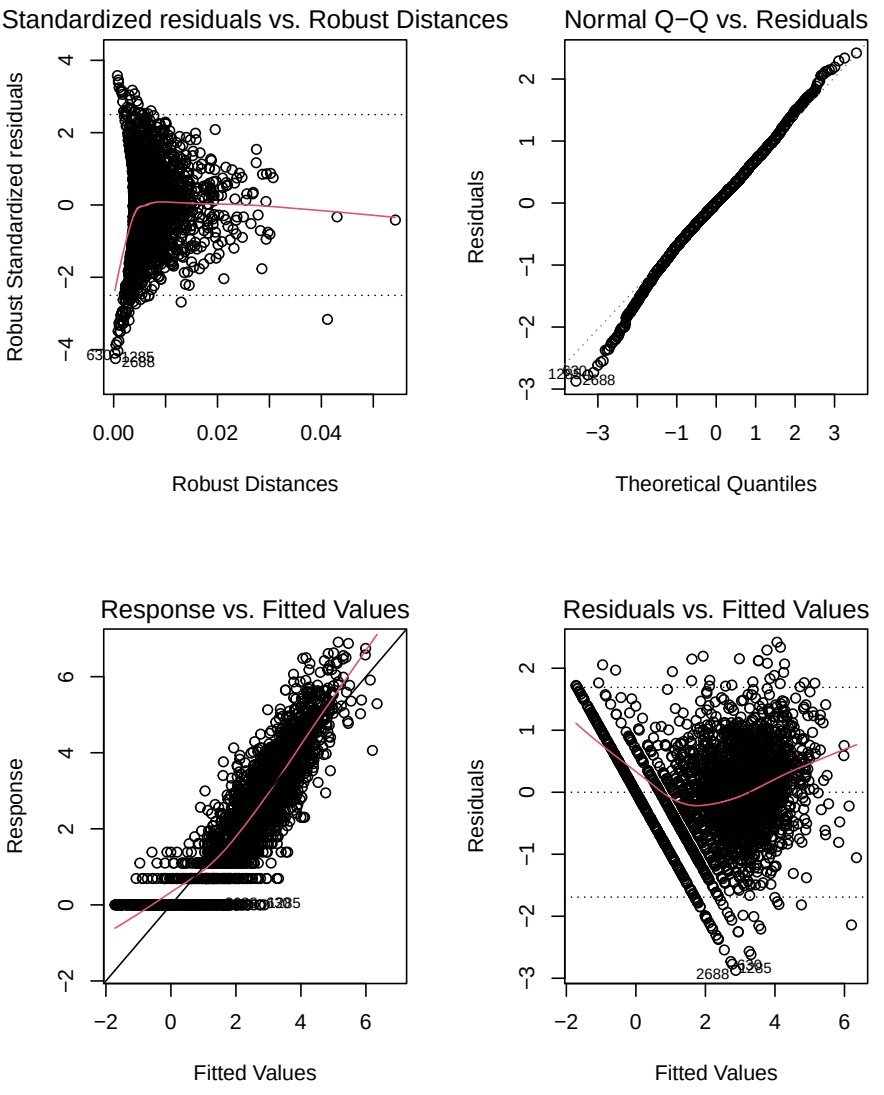

Figure A.9. Regression diagnostics for Model 4 from Table 2

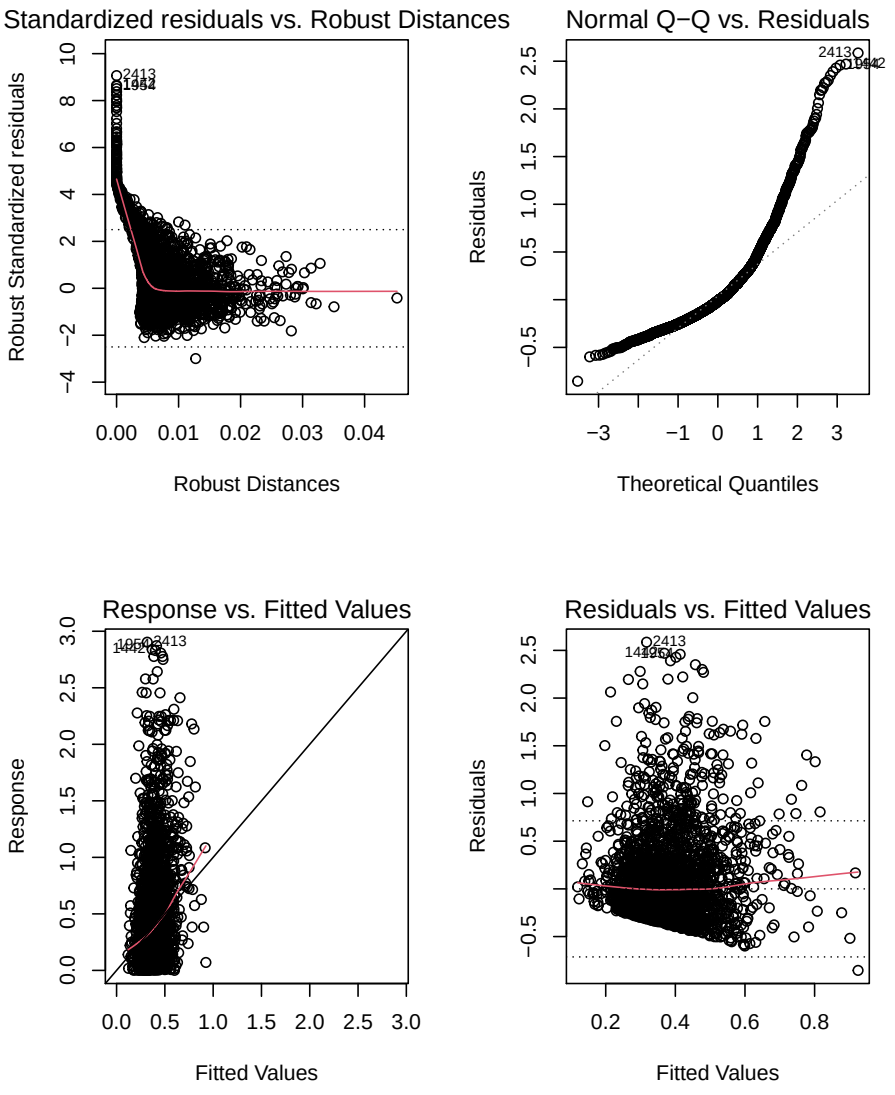

Figure A.10. Regression diagnostics for Model 5 from Table 3

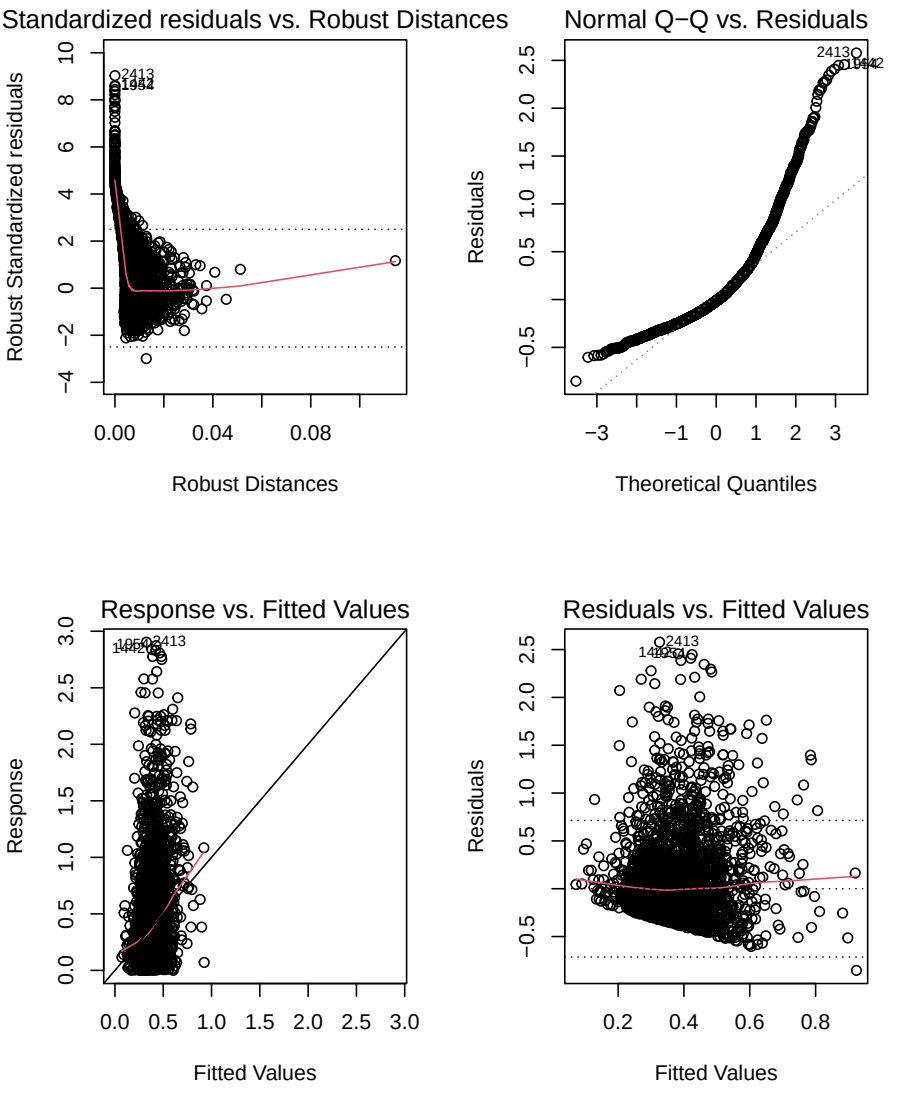

Figure A.11. Regression diagnostics for Model 6 from Table 3

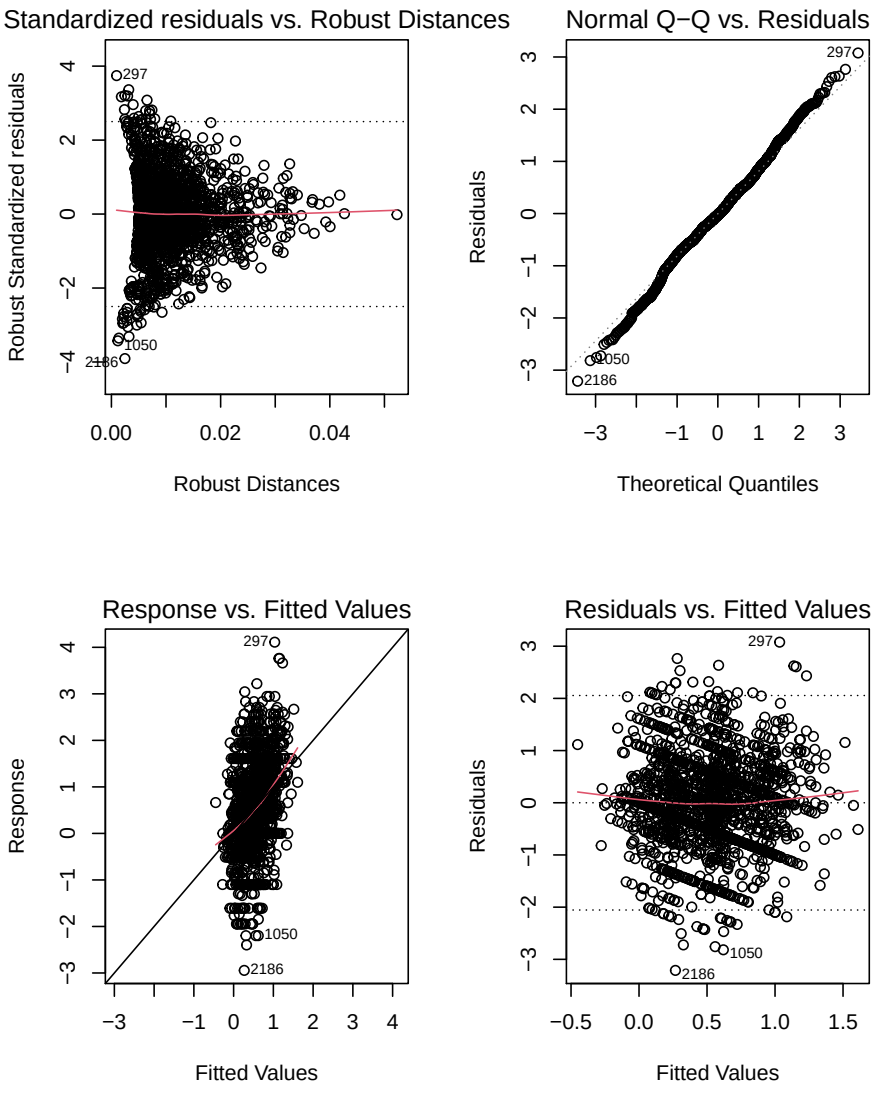

Figure A.12. Regression diagnostics for Model 7 from Table 3

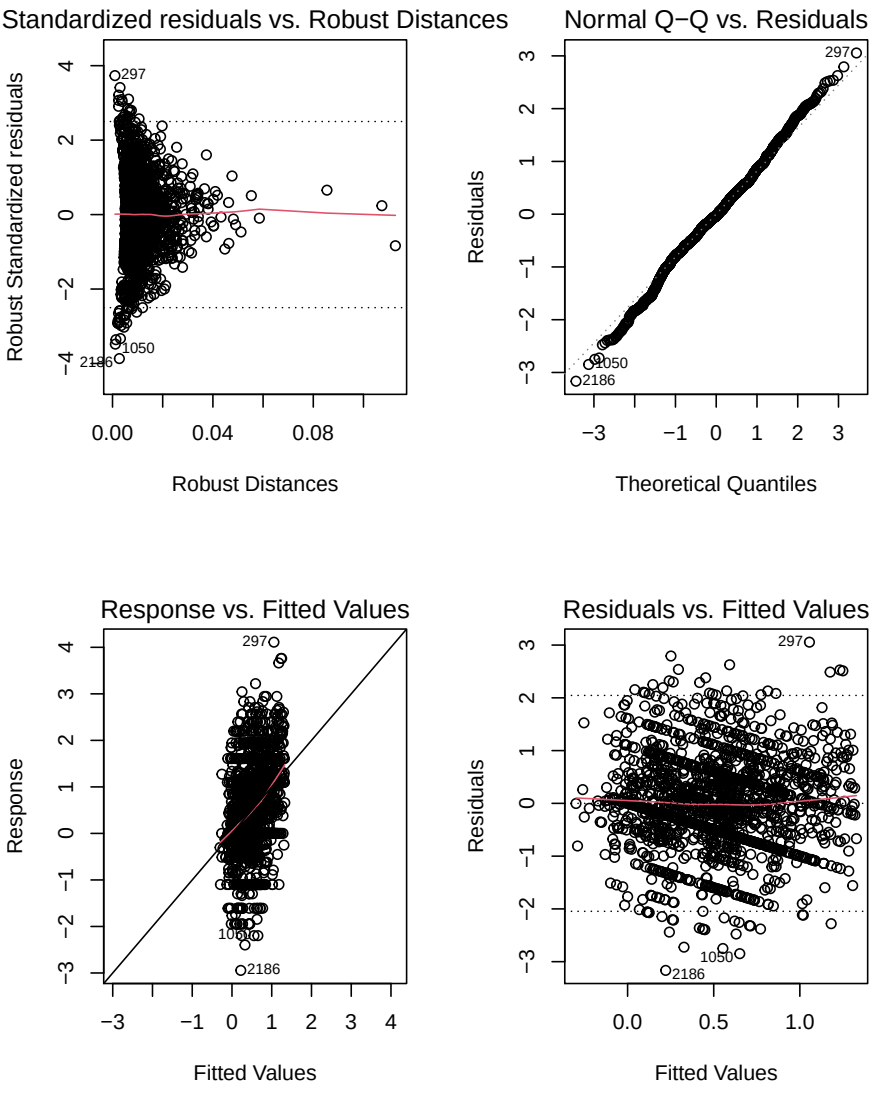

Figure A.13. Regression diagnostics for Model 8 from Table 3

References

Todorov, Valentin, and Peter Filzmoser. 2009. "An Object-Oriented Framework for Robust Multivariate Analysis." *Journal of Statistical Software* 32 (3): 1–47. http://www.jstatsoft.org/v32/i03/.