Signal Received? Authoritarian Elections and the Salience of Autocrats

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Electoral Studies

Supplementary Information

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A Data

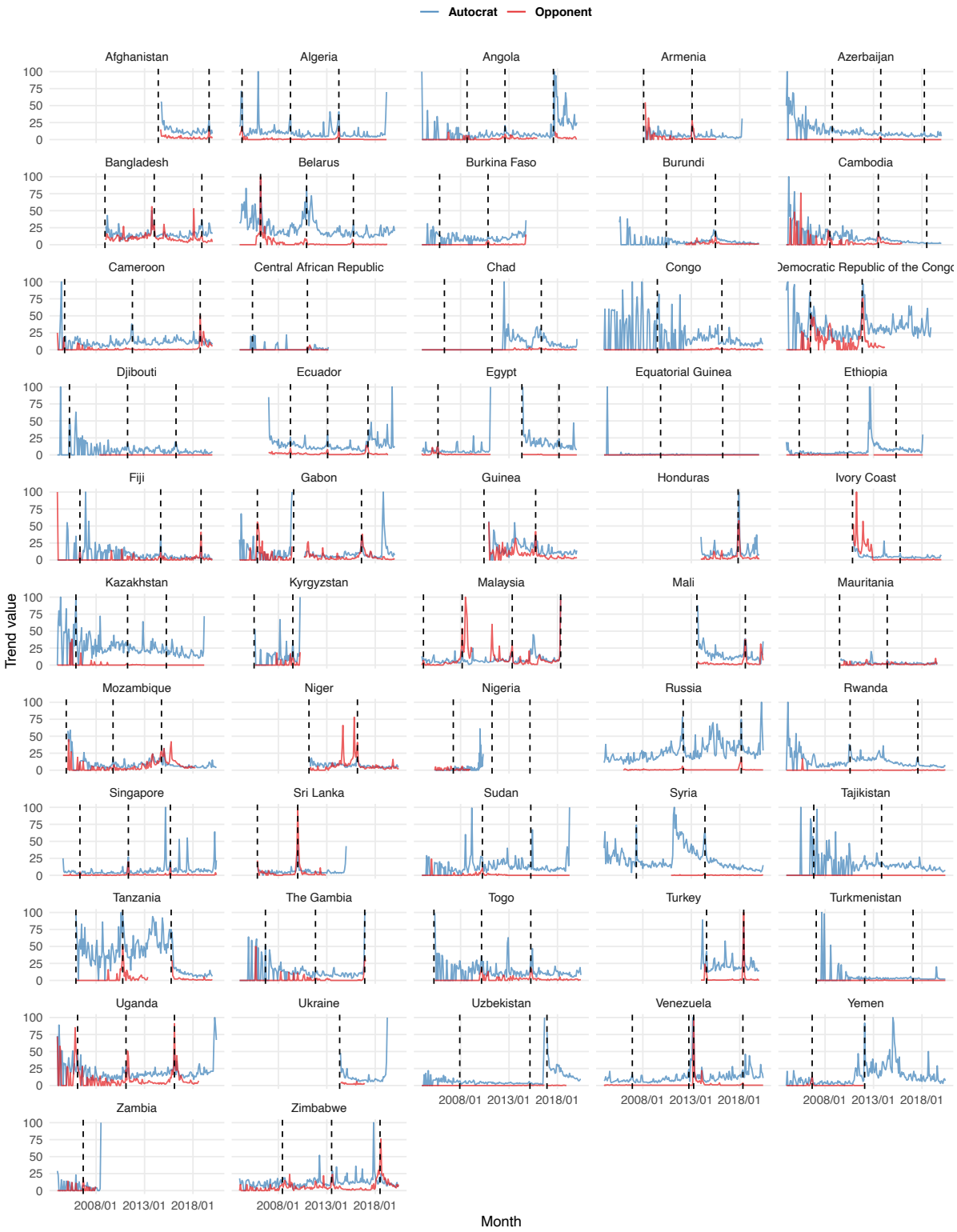

Figure S1. Monthly Google Trends search data for autocrat and opponent by country, 2004–2019
Notes: Vertical dashed lines indicate election months.

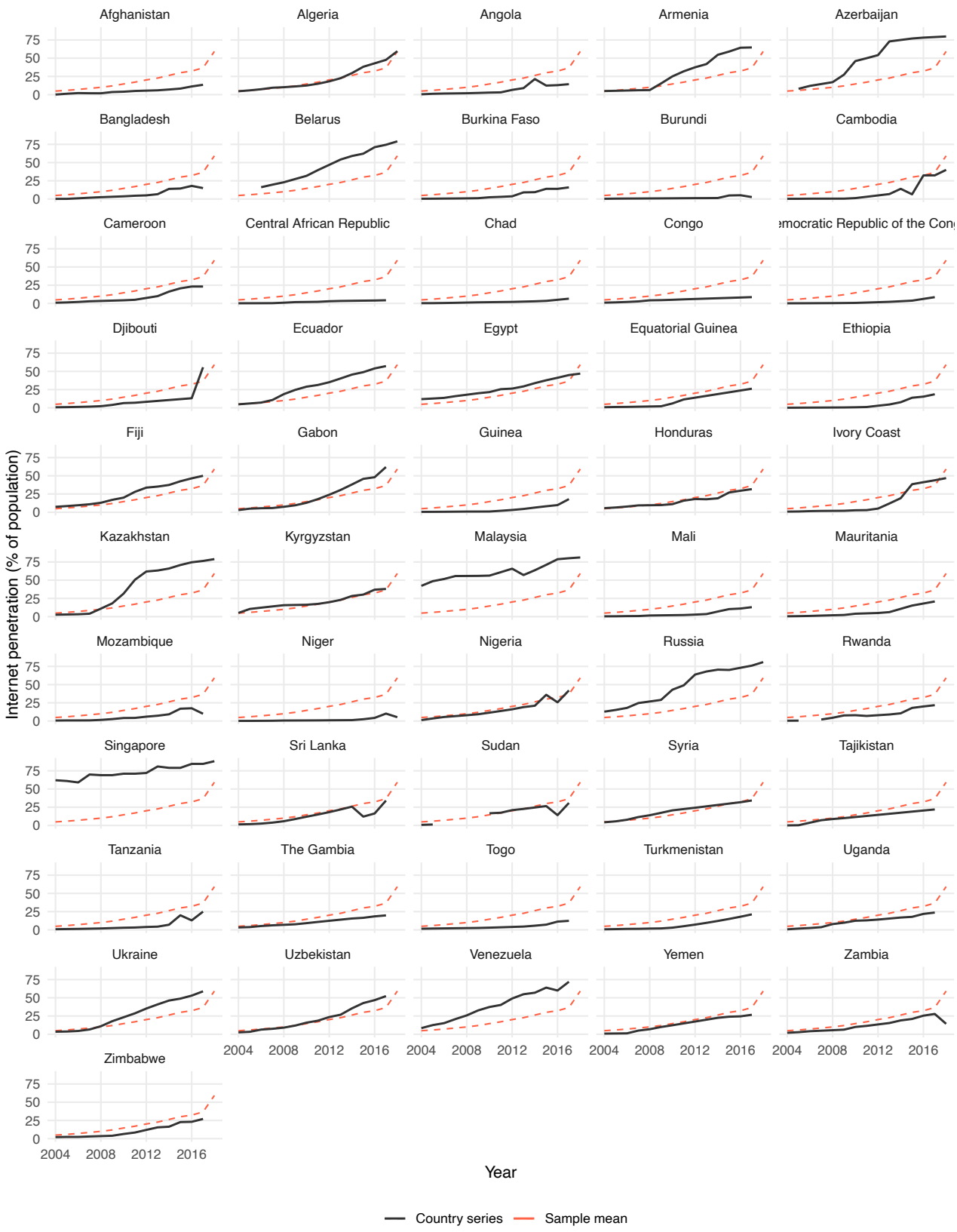

Figure S2. Internet penetration by country, 2004–2018

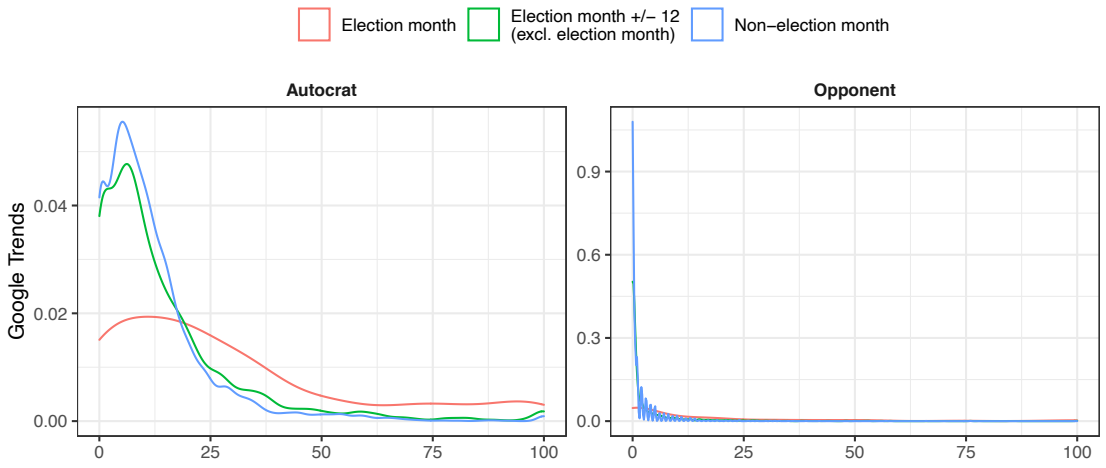

Figure S3. Density plots of Google Trends values for the autocrat and the opponent in the election month, the 12 months before and after the election (excluding the election month), and non-election months

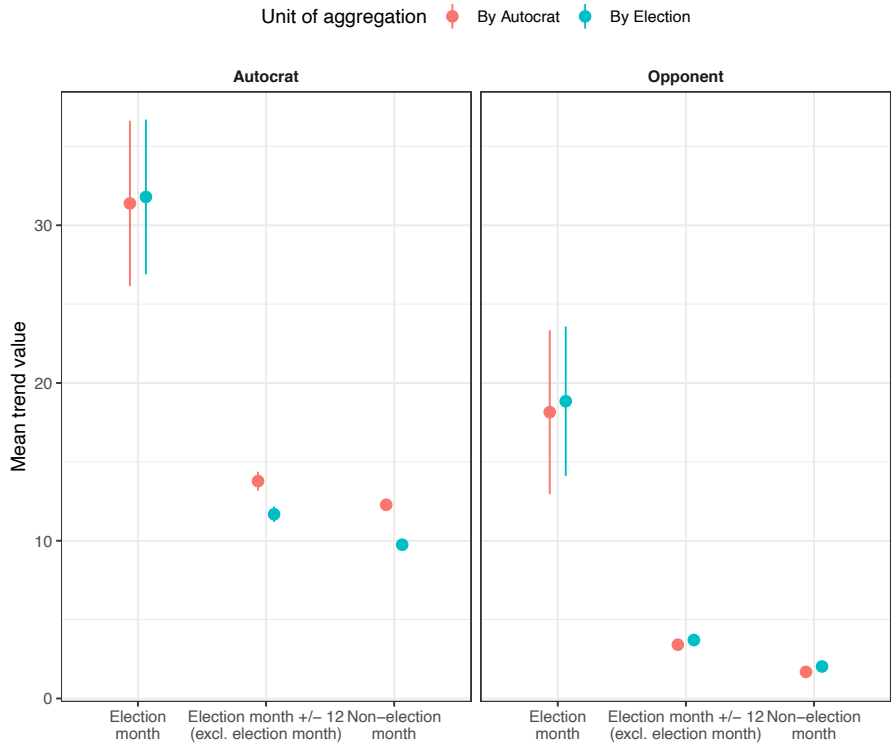

Figure S4. Mean Google Trends values for autocrat and opponent in election and non-election months, *comparing samples with different units of analysis*

Notes: The sample obtained by the first method (by autocrat) only includes Google Trends values for those periods when the autocrat is in power (n = 8,123). The second method (by election) selects observations within a window of 2.5 years before and 2.5 years after the election and tracks Google Trends values for the regime's candidate (who may or may not be the sitting autocrat at the time of the election) and the main opponent during the same period (n = 8,328). Vertical bars are 95% confidence intervals.

B Robustness Checks

Table S1. Robustness Check: Country and month-year fixed effects models of Google Trends values for autocrat and opponent

	Autocrat	*Opponent*	*Autocrat*	*Opponent*
	(1)	(2)	(3)	(4)
Election month – 6	0.584	0.450		
	(0.983)	(0.301)		
Election month – 5	3.168**	1.182**		
	(1.386)	(0.571)		
Election month – 4	1.717	1.640**		
	(1.315)	(0.757)		
Election month – 3	3.816**	2.869**		
	(1.469)	(1.129)		
Election month – 2	2.417**	3.533***		
	(0.964)	(0.710)		
Election month – 1	7.702***	4.749***		
	(1.503)	(0.979)		
Election month	19.004***	16.073***		
	(2.247)	(2.485)		
Election month + 1	9.017***	5.470***		
	(2.221)	(1.685)		
Election month + 2	5.644***	5.063***		
	(1.724)	(1.446)		
Election month + 3	1.234	2.571**		
	(1.253)	(1.109)		
Election month + 4	2.915**	1.846**		
	(1.362)	(0.723)		
Election month + 5	-0.050	2.373*		
	(1.134)	(1.186)		
Election month + 6	1.965	2.529***		
	(1.247)	(0.740)		
Election quarter			12.046***	8.928***
			(1.475)	(1.473)
Competitive election			3.413	-1.166
			(3.665)	(0.934)
Election quarter × Competitive election			-1.817	0.094
			(3.124)	(3.848)
Country Fixed Effects	Yes	Yes	Yes	Yes
Month-Year Fixed Effects	Yes	Yes	Yes	Yes
Countries	52	52	52	52
Observations	8,123	7,406	8,123	7,406
R^2	0.330	0.281	0.325	0.253

Table entries are ordinary least squares estimates with country and month-year fixed effects. Standard errors clustered by country in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table S2. Robustness Check: Autocrat fixed effects models of Google Trends values for autocrat and opponent

	Autocrat	*Opponent*	*Autocrat*	*Opponent*
	(1)	(2)	(3)	(4)
Election month – 6	-0.335	0.031		
	(1.022)	(0.234)		
Election month – 5	2.074	0.963*		
	(1.257)	(0.517)		
Election month – 4	1.711	1.645**		
	(1.344)	(0.703)		
Election month – 3	3.633**	2.739**		
	(1.802)	(1.083)		
Election month – 2	1.789	3.069***		
	(1.130)	(0.659)		
Election month – 1	5.661***	3.958***		
	(1.444)	(0.851)		
Election month	19.120***	16.192***		
	(2.426)	(2.589)		
Election month + 1	9.177***	5.685***		
	(2.269)	(1.738)		
Election month + 2	5.270***	5.056***		
	(1.644)	(1.458)		
Election month + 3	0.954	2.588**		
	(1.331)	(1.103)		
Election month + 4	2.352*	1.860**		
	(1.337)	(0.703)		
Election month + 5	-0.126	2.384*		
	(1.089)	(1.249)		
Election month + 6	1.667	2.515***		
	(1.087)	(0.760)		
Election quarter			12.092***	8.952***
			(1.545)	(1.535)
Competitive election			-0.688	-0.516
			(1.179)	(0.994)
Election quarter × Competitive election			-1.352	0.477
			(3.110)	(3.905)
Autocrat Fixed Effects	Yes	Yes	Yes	Yes
Countries	52	52	52	52
Observations	8,123	7,406	8,123	7,406
R^2	0.361	0.276	0.356	0.246

Table entries are ordinary least squares estimates with autocrat fixed effects. Standard errors clustered by country in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table S3. Robustness Check: Regression models of Google Trends values with political and economic controls

	Autocrat	*Opponent*	*Autocrat*	*Opponent*
	(1)	(2)	(3)	(4)
Election month − 6	0.124	0.218		
	(1.410)	(0.323)		
Election month − 5	4.557**	1.413*		
	(1.785)	(0.761)		
Election month − 4	2.398	1.866*		
	(1.615)	(0.992)		
Election month − 3	4.392**	3.519**		
	(2.037)	(1.679)		
Election month − 2	2.230*	3.717***		
	(1.203)	(0.911)		
Election month − 1	8.845***	4.668***		
	(2.041)	(1.087)		
Election month	18.777***	14.924***		
	(2.819)	(2.897)		
Election month + 1	9.245***	5.577***		
	(2.418)	(1.943)		
Election month + 2	5.607***	4.847***		
	(1.933)	(1.448)		
Election month + 3	0.628	2.591**		
	(1.647)	(1.266)		
Election month + 4	2.692*	1.757**		
	(1.634)	(0.735)		
Election month + 5	-0.319	2.421*		
	(1.591)	(1.432)		
Election month + 6	1.967	2.790***		
	(1.363)	(0.829)		
Election quarter			12.006***	8.116***
			(1.824)	(1.696)
Competitive election			4.415	-1.001
			(4.711)	(1.486)
Election quarter × Competitive election			-0.011	1.890
			(3.749)	(4.449)
Internet penetration	0.025	0.010	0.028	0.010
	(0.049)	(0.026)	(0.046)	(0.025)
GDP/capita	-0.0002	-0.00004	-0.0002**	-0.00002
	(0.0001)	(0.00003)	(0.0001)	(0.00002)
GDP growth	-10.943	1.611	-13.036	0.844
	(16.324)	(3.117)	(16.155)	(3.241)
Coup	5.201***	-0.870	5.270***	-0.659

	(1.848)	(0.628)	(1.819)	(0.525)
Population	0.067*	0.014	0.066*	0.013
	(0.038)	(0.014)	(0.039)	(0.014)
Urbanization rate	0.050	0.005	0.065	-0.002
	(0.062)	(0.023)	(0.056)	(0.023)
Polyarchy (V-Dem)	3.597	2.087	-11.638	5.145
	(16.131)	(5.671)	(11.955)	(7.631)
Government censorship: print/broadcast	-0.171	1.199*	0.470	1.076
	(1.805)	(0.707)	(1.536)	(0.722)
Government censorship: internet	-0.736	-0.174	-0.618	-0.186
	(1.161)	(0.439)	(1.211)	(0.454)
Intercept	7.534	1.147	12.011**	0.837
	(4.795)	(2.318)	(4.900)	(2.749)
Countries	49	49	49	49
Observations	6,694	6,207	6,694	6,207
R^2	0.073	0.131	0.070	0.102

Table entries are ordinary least squares estimates. Standard errors clustered by country in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table S4. Robustness Check: Regression analysis of Google Trends values limiting the sample to 1- and 2-year windows around the election, regardless of whether the autocrat is in power

	Sample window:							
	Election month +/- 1 year				*Election month +/- 2 years*			
	Autocrat	Opponent	Autocrat	Opponent	Autocrat	Opponent	Autocrat	Opponent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election month – 6	0.804	0.239			1.029	0.467		
	(0.912)	(0.478)			(0.928)	(0.498)		
Election month – 5	-0.232	0.496			-0.007	0.680		
	(0.795)	(0.434)			(0.803)	(0.417)		
Election month – 4	2.294**	2.063**			2.541**	2.297***		
	(1.143)	(0.857)			(1.139)	(0.832)		
Election month – 3	1.141	2.114**			1.391	2.306***		
	(1.202)	(0.841)			(1.134)	(0.825)		
Election month – 2	4.171***	4.118***			4.421***	4.356***		
	(1.149)	(1.087)			(1.164)	(1.087)		
Election month – 1	4.061***	4.209***			4.311***	4.408***		
	(1.280)	(0.808)			(1.220)	(0.815)		
Election month	21.364***	16.197***			21.633***	16.509***		
	(2.359)	(2.349)			(2.381)	(2.399)		
Election month + 1	5.579***	5.729***			5.816***	5.982***		
	(1.850)	(1.680)			(1.842)	(1.680)		
Election month + 2	7.641***	5.553***			7.878***	5.853***		
	(1.794)	(1.585)			(1.827)	(1.596)		
Election month + 3	-0.108	1.967**			0.130	2.220**		
	(1.134)	(0.974)			(1.035)	(0.957)		
Election month + 4	4.361***	1.586**			4.599***	1.886**		
	(1.515)	(0.758)			(1.500)	(0.772)		
Election month + 5	-1.573*	1.428			-1.335	1.681		
	(0.923)	(1.058)			(0.882)	(1.031)		
Election month + 6	3.447***	2.102***			3.684***	2.402***		
	(1.093)	(0.750)			(1.117)	(0.725)		
Election quarter			13.967***	9.047***			14.421***	9.693***
			(1.410)	(1.575)			(1.458)	(1.671)
Competitive election			5.701*	-0.614			4.970*	-0.747
			(2.842)	(1.059)			(2.816)	(1.002)
Election quarter × Competitive election			-0.459	0.370			0.063	0.590
			(3.456)	(3.151)			(3.656)	(3.234)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Countries	52	52	52	52	52	52	52	52
Observations	3,786	3,240	3,786	3,240	7,149	6,111	7,149	6,111
R^2	0.305	0.262	0.314	0.235	0.295	0.251	0.302	0.225

Table entries are ordinary least squares estimates with country fixed effects. Standard errors clustered by country in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table S5. Robustness Check: Robust regression of Google Trends values with country fixed effects

	Autocrat		*Opponent*		*Autocrat*		*Opponent*	
	Rob. regression	Rob. Regression w/ FE	Rob. regression	Rob. Regression w/ FE	Rob. regression	Rob. Regression w/ FE	Rob. regression	Rob. Regression w/ FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election month − 6	-0.309	-0.218	0.250**	0.238***				
	(0.781)	(0.541)	(0.108)	(0.079)				
Election month − 5	1.793**	1.250**	0.154	0.207**				
	(0.837)	(0.581)	(0.120)	(0.088)				
Election month − 4	0.678	0.904*	0.252**	0.334***				
	(0.775)	(0.537)	(0.108)	(0.078)				
Election month − 3	1.686**	1.484**	0.371***	0.388***				
	(0.834)	(0.578)	(0.119)	(0.088)				
Election month − 2	1.700**	1.911***	0.910***	0.811***				
	(0.772)	(0.535)	(0.107)	(0.078)				
Election month − 1	4.772***	4.069***	0.944***	0.918***				
	(0.837)	(0.581)	(0.120)	(0.089)				
Election month	13.889***	12.864***	6.802***	7.233***				
	(0.845)	(0.585)	(0.116)	(0.084)				
Election month + 1	5.453***	4.748***	0.464***	0.657***				
	(0.948)	(0.658)	(0.132)	(0.097)				
Election month + 2	2.334***	2.479***	0.464***	0.503***				
	(0.809)	(0.560)	(0.111)	(0.080)				
Election month + 3	0.576	0.907	0.220*	0.350***				
	(0.948)	(0.658)	(0.132)	(0.096)				
Election month + 4	0.764	0.874	0.312***	0.363***				
	(0.803)	(0.556)	(0.110)	(0.079)				
Election month + 5	-0.167	-0.037	0.238*	0.273***				
	(0.959)	(0.666)	(0.132)	(0.097)				
Election month + 6	1.162	1.021*	0.378***	0.320***				
	(0.796)	(0.551)	(0.109)	(0.079)				
Election quarter					7.907***	7.074***	2.279***	2.089***
					(0.549)	(0.379)	(0.068)	(0.052)
Competitive election					-0.540*	0.461	0.402***	-0.237***
					(0.278)	(0.331)	(0.035)	(0.044)
Election quarter × Competitive election					-0.956	0.440	1.732***	1.159***
					(1.387)	(0.957)	(0.167)	(0.126)
Intercept	9.822***	12.479***	0.650***	2.497***	10.154***	12.637***	0.586***	2.476***
	(0.108)	(0.755)	(0.015)	(0.103)	(0.110)	(0.760)	(0.014)	(0.099)
Country Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
AIC	67086	64560	50226	46020	67096	64591	50379	46237

Log-likelihood	-33528	-32214	-25098	-22947	-33543	-32239	-25184	-23065
Observations	8,123	8,123	7,406	6,874	8,123	8,123	7,406	6,874

Table entries are estimates from a linear model fit by robust regression using an *M*-estimator with Huber weighting. Models include country fixed effects where indicated. Standard errors in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$. In Huber's *M*-estimator, observations with small residuals receive a weight of 1 and the larger the residual, the smaller the weight, as given by the weight function: $\omega(z) = \begin{cases} 1, & |z| < k, \\ k/|z|, & |z| \geq k. \end{cases}$