One-Sided Violence Against Civilians in War:
Some Alternative Specifications

In this appendix, we present several alternative specifications of the models in Table IV in the article. The first table includes all the logit models predicting the incidence of one-sided violence in armed conflict, 1989-2004; all other tables present the negative binomial regression models of the magnitude of one-sided violence for the same period. All models are first included in their original form to facilitate comparison. The following specifications are made:

Different cut-off points are used for the dummy variables for autocracy and democracy. Autocracy2 is coded as −10 to −6 on the Polity scale, and Democracy2 is coded as 6 to 10. While the cut-off points used in the article follow the coding of Harff (2003), with which we make the comparison, these cut-off points are instead in line with Hegre et al (2001).

The polity scale from −10 to 10, and in some models its squared form, are used instead of the dummies to detect linearity or curvlinearity.

The natural log of trade (which is the annual trade as a percentage of GDP) is used.

For the count models, Rwanda 1994 is included (which is an outlier that was excluded in all the models in the article).

Table 1. Models 1 and 2:
Logit of incidence of one-sided violence, all actors

	1a (original)	*1b*	*2a (original)*	*2b*
Previous war	0.144	0.156		
	(0.262)	(0.261)		
Civil war			0.787***	0.813***
			(0.185)	(0.180)
Autocracy	-0.255		-0.24	
	(0.253)		(0.308)	
Autocracy2		-0.596		-0.642**
		(0.365)		(0.287)
Democracy			0.251	
			(0.328)	
Democracy2				0.143
				(0.265)
Trade	-0.002			
	(0.004)			
Ln(Trade)		-0.049		
		(0.191)		
Government			-0.421	-0.425
			(0.269)	(0.270)
One-sided violence$_{t-1}$	2.034***	2.065***	1.937***	1.965***
	(0.207)	(0.207)	(0.207)	(0.212)
Constant	-1.835***	-1.769**	-2.783***	-2.759***
	(0.367)	(0.848)	(0.358)	(0.292)
Pseudo R2	0.1560	0.1604	0.1708	0.1767
N	1073	1073	1256	1256

Standard errors adjusted for clustering on country. Estimations performed using Stata 8.0. * $p < .1$; ** $p < .05$; *** $p < .01$ (two-tailed tests).

Comments to Table 1

This table contains the two logit models using alternative specifications for autocracy, democracy and trade. The only change in results is that autocracy with the alternative cut-off point has a significant negative effect on the incidence of one-sided violence in model 2b.

Table 2. Model 3:
Negative binomial regression of number killed in one-sided violence, all actors

	3a (original)	3b	3c (with Rwanda 1994)
Previous war	0.314	0.244	1.868***
	(0.361)	(0.393)	(0.707)
Autocracy	0.433		2.516***
	(0.332)		(0.859)
Autocracy2		-0.060	
		(0.450)	
Trade	-0.006		0.019
	(0.004)		(0.019)
Ln(Trade)		-0.069	
		(0.429)	
One-sided	0.009***	0.009***	0.009
violence$_{t-1}$	(0.002)	(0.002)	(0.006)
Constant	2.887***	3.110*	0.706
	(0.4)	(1.743)	(1.058)
Lnalpha	3.082	3.089	3.323
	(0.169)	(0.167)	(0.187)
Alpha	21.792	21.946	27.734
	(3.682)	(3.660)	(5.186)
N	991	991	992

Standard errors adjusted for clustering on country. Estimations performed using Stata 8.0. * $p < .1$; ** $p < .05$; *** $p < .01$ (two-tailed tests).

Comments on Table 2

Model 3b presents model 3 with alternative specifications of autocracy and trade, which does not change the results substantially (autocracy2 has a negative sign instead of a positive, but the standard error is still large). In model 3c, which includes Rwanda 1994, the results are altered to a large extent. Previous war now has a strong positive effect, while previous one-sided violence does not. Moreover, autocracy now also has a positive significant effect. This not only illustrates how influential the observation of Rwanda 1994 is, but it also further highlights the difference between genocide and one-sided violence: when we include the only clear incident of genocide during the observed period, two of the three factors identified by Harff have strong effects.

Table 3. Model 4:
Negative binomial regression of number killed in one-sided violence, all actors

	4a (original)	4b	4c	4d, (incl. Rwanda 1994)	4e, (incl. Rwanda 1994)
Civil war	1.008***	1.029***	1.039***	0.490	0.305
	(0.342)	(0.388)	(0.357)	(0.522)	(0.400)
Autocracy	0.888**			1.851***	
	(0.369)			(0.546)	
Autocracy2		-0.134			
		(0.531)			
Democracy	0.722**			1.244**	
	(0.349)			(0.533)	
Democracy2		-0.119			
		(0.347)			
Polity			0.0006		-0.187*
			(0.032)		(0.100)
Polity squared			-0.002		0.026**
			(0.006)		(0.013)
Government	0.021	0.038	0.011	2.850***	1.883**
	(0.341)	(0.346)	(0.339)	(0.965)	(0.882)
One-sided violence$_{t-1}$	0.01***	0.009***	0.009***	0.013**	0.012***
	(0.002)	(0.002)	(0.002)	(0.005)	(0.004)
Constant	0.939*	1.720***	1.722	0.890	1.984***
	(0.548)	(0.620)	(0.598)	(0.923)	(0.715)
Lnalpha	3.177	3.185	3.185	3.407	3.400
	(0.163)	(0.162)	(0.162)	(0.170)	(0.173)
Alpha	23.966	24.170	24.171	30.189	29.965
	(3.897)	(3.915)	(3.918)	(5.120)	(5.171)
N	1159	1159	1159	1160	1160

Standard errors adjusted for clustering on country. Estimations performed using Stata 8.0. * $p < .1$; ** $p < .05$; *** $p < .01$ (two-tailed tests).

Comment to Table 3

As model 4b reveals, the effect of autocracy and democracy are both sensitive to the cut-off point; these are no longer significant. In 4c polity and polity squared are used instead, but these are not statistically significant either. Hence, the U-shaped effect found in the original model is not strictly curvilinear. When including Rwanda 1994, democracy and autocracy are both positive and significant, as in the original model. However, civil war has lost its significant effect, and instead the government dummy is positive and strongly significant. Rwanda 1994 is coded as a minor armed conflict, which explains why civil war no longer has any effect – Rwanda is simply a strongly influential case in this model. While there is no significant difference between governments and rebels in the original model, governments are significantly more violent when including the single case of the Rwandan genocide. Also noteworthy is that when using the polity variables with Rwanda 1994 included, as in model 4e, polity has a negative and polity squared a positive effect, both statistically significant. Hence, when including Rwanda the U-shaped correlation appears again.

Table 4. Model 5:
Negative binomial regression of number killed in one-sided violence, governments only

	5a (original)	5b	5c	5d (incl. Rwanda 1994)	5e (incl. Rwanda 1994)
Civil war	0.680	0.574	0.681	-1.088	-0.528
	(0.464)	(0.495)	(0.468)	(0.708)	(0.673)
Autocracy	1.171*			4.319***	
	(0.631)			(1.467)	
Autocracy2		0.674			
		(0.624)			
Democracy	-0.052			0.256	
	(0.73)			(0.534)	
Democracy2		-0.890			
		(0.651)			
Polity			-0.085**		-0.421***
			(0.043)		(0.098)
Polity squared			-0.007		0.026**
			(0.008)		(0.012)
One-sided violence$_{t-1}$	0.008***	0.007**	0.007**	0.012	0.007
	(0.003)	(0.003)	(0.003)	(0.018)	(0.006)
Constant	1.425	2.333***	2.399***	3.558**	4.466***
	(0.897)	(0.864)	(0.881)	(1.375)	(1.230)
Lnalpha	3.595	3.599	3.597	3.882	3.838
	(0.202)	(0.199)	(0.202)	(0.212)	(0.209)
Alpha	36.411	36.545	36.504	48.543	46.426
	(7.352)	(7.279)	(7.367)	(10.307)	(9.691)
N	426	426	426	427	427

Standard errors adjusted for clustering on country. Estimations performed using Stata 8.0. * $p < .1$; ** $p < .05$; *** $p < .01$ (two-tailed tests).

Comment to Table 4

Again, the effect of autocracy is proven to be sensitive to the alternative cut-off point, since it no longer has a significant effect in model 5b. However, when using the polity scale, as in model 5c, polity has a negative and significant effect, implying that more democratic governments are less violent. When adding the observation of Rwanda 1994 to the original model, which is shown in model 5d, the only substantial change is that the lagged dependent variable no longer has a significant effect. Model 5e reports the effect of polity and polity squared with Rwanda 1994 included. The most interesting change, compared to model 5c, is that polity squared has a positive and significant effect. Hence, when including Rwanda the U-shape appears again, as in model 4e in Table 3.

Table 5. Model 6:

Negative binomial regression of number killed in one-sided violence, rebel groups only

	6a (original)	6b	6c
Civil war	1.086**	1.006**	1.005**
	(0.442)	(0.437)	(0.421)
Autocracy	0.747		
	(0.584)		
Autocracy2		-0.691	
		(0.589)	
Democracy	0.966*		
	(0.558)		
Democracy2		0.089	
		(0.388)	
Polity			0.043
			(0.040)
Polity squared			-0.004
			(0.007)
One-sided violence$_{t-1}$	0.010***	0.010***	0.010***
	(0.002)	(0.002)	(0.002)
Constant	0.792	1.773**	1.753**
	(0.838)	(0.688)	(0.677)
Lnalpha	2.950	2.948	2.954
	(0.204)	(0.205)	(0.205)
Alpha	19.106	19.073	19.189
	(3.906)	(3.905)	(3.936)
N	733	733	733

Standard errors adjusted for clustering on country. Estimations performed using Stata 8.0. * $p < .1$; ** $p < .05$; *** $p < .01$ (two-tailed tests).

Comment to Table 5

The positive effect of democracy depends entirely on the cut-off point used. When using 6 on the polity scale for democracy, as in model 6b, the effect is no longer significant. The polity scale does not have a significant effect either, as model 6c shows. Our article and these alternative specifications indicate that democracy might be an important factor when accounting for one-sided violence by non-state actors, but that it is not a simple correlation. What the actual effect of democracy on one-sided violence by rebel groups looks like requires more theorizing and further empirical evaluations.