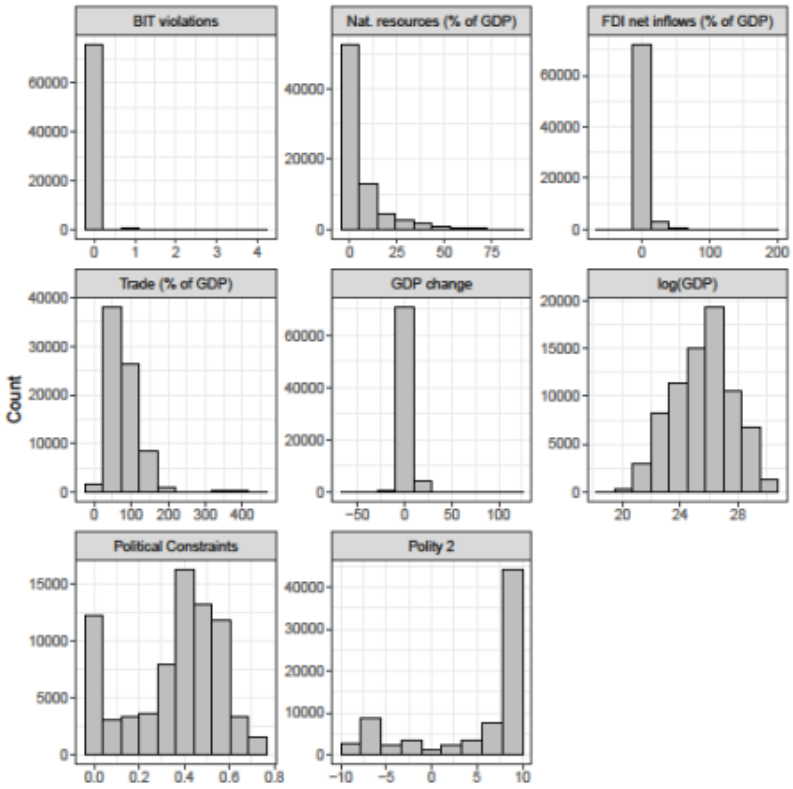
Online Appendix: **The Role of Democratic Governance and Indirect Expropriation in International Investment Treaty Violations**

In addition to the models presented in the manuscript, we provide a number of alternative modeling strategies to more precisely estimate the relationship between credible democratic elections and investment treaty violation. The Online Appendix includes summaries of the variables used in the analyses, the extended results of the main analysis, as well as several robustness checks of the main analysis to various sub-sampling procedures, and modeling techniques.

Summary of Variables

For a greater description of all our predictors for BIT violations, each panel in Figure A.1 displays the distribution of each variable used in the manuscript's main analyses in Table A.1.

Figure A.1: Distribution of each variable in total data set.



Notes: Though it appears as though there are no violations in the full data set, there are 118 violations. The number of years with no violation are much more frequent (less than 0.4% of potential violations actually occur).

Robustness of Main Analysis

First, Table A.1 shows the full estimated coefficients of the main analysis presented in the manuscript. The variable of interest, level of democracy, is reliably and positively related to BIT violations in all models when time until election equals zero. As a robustness, since the regressions are complete-case analyses, we use sampling in the last subsection of the Appendix to confirm the results are not an artifact of using the full data set.

Table A.1: Extended logistic regression estimates from manuscript.

	Dependent variable:			
	Any violation (0=No, 1=violations>0)			
	(1)	(2)	(3)	(4)
Polity	0.033*	0.046*		
	(0.017)	(0.018)		
Anocracy			1.015***	0.735*
			(0.280)	(0.327)
Democracy			1.242***	1.349***
			(0.304)	(0.331)
Time until election		0.195**		0.293
		(0.065)		(0.210)
Polity*Time until election		0.017		
		(0.009)		
Anocracy*Time until election				−0.326
				(0.231)
Democracy*Time until election				0.120
				(0.229)
Control variables				
Political constraints	−0.761	−0.780	−1.136*	−1.150*
	(0.491)	(0.490)	(0.461)	(0.464)
log(GDP)	−0.093**	−0.107**	−0.071	−0.085*
	(0.035)	(0.036)	(0.037)	(0.037)
Δ GDP	0.020**	0.019**	0.016*	0.017*
	(0.007)	(0.007)	(0.007)	(0.007)
Trade (% of GDP)	−0.005*	−0.005*	−0.005*	−0.006**
	(0.002)	(0.002)	(0.002)	(0.002)
FDI, net inflows (% of GDP)	0.001	0.001	0.001	0.001
	(0.009)	(0.009)	(0.009)	(0.009)
Natural resource rents (% of GDP)	0.011	0.009	0.017*	0.017*
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	−3.172***	−2.584**	−4.513***	−3.880***
	(0.925)	(0.953)	(1.001)	(1.044)
AIC	3014.593	2998.084	3000.918	2979.041
BIC	3088.518	3090.490	3084.084	3089.929
Log Likelihood	-1499.297	-1489.042	-1491.459	-1477.521
N	76160	76160	76160	76160

Notes: The outcome in each model is whether any violation occurred. Logistic regression coefficients shown with standard errors in parentheses (*** p < 0.001, ** p < 0.01, * p < 0.05). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those treaty-years there is no BIT present, leaving a total of 76,160 potential violation-years.

To test whether the interaction between democracy and time until election is linear, we calculate binned estimates of the marginal effect of the moderator ($D = time\ until\ election$) on $x = polity$ (corresponding to autocracy, anocracy, and democracy). We are primarily concerned with whether the interactive association is in the correct order (i.e. monotonically increasing or decreasing), whether we estimate the correct number of bins (pair-wise t-statistics for the binning estimates), and whether we can reject the linear multiplicative interaction model by comparing it with a more flexible model of multiple bins (Wald test). We estimate a linear model with violations as the outcome using interflex in R (Hainmueller, Mummolo, and Xu 2018) to reject the null hypothesis of the

Wald test that the linear interaction model and the three-bin model (autocracy, anocracy, and democracy) are statistically equivalent ($p \approx 0$). This provides more evidence for a non-linear relationship between election timing and election quality on violations.

We also consider various lag structures based on the empirical patterns of BIT violations. Since most offenses usually occur between zero to five years before the filing or publication of documents, we conduct additional logistic regression models with one, two, and three year lags for all the covariates, except time until election, in case litigants strategically time complaints. The results shown in Table A.2 confirm that the contemporaneous values provide the best model fit, and most of the estimated coefficients for the time invariant variables stay the same, which further justifies our modeling choice in the manuscript. Moreover, the marginal effect of regime type is only reliable as elections near.

Table A.2: Logistic regression from manuscript with various lags for covariates.

	Dependent variable:			
	Any Violations			
	(1) No lag	(2) Lag_{t-1}	(3) Lag_{t-2}	(4) Lag_{t-3}
Anocracy	0.994**	0.813*	0.552	0.451
	(0.338)	(0.333)	(0.331)	(0.337)
Democracy	1.571***	1.684***	1.399***	1.502***
	(0.340)	(0.333)	(0.317)	(0.315)
Time until election	0.237	0.349	0.142	0.163
	(0.203)	(0.224)	(0.155)	(0.156)
Anocracy*Time until election	−0.222	−0.387	−0.160	−0.191
	(0.229)	(0.245)	(0.191)	(0.196)
Democracy*Time until election	0.159	0.053	0.260	0.216
	(0.223)	(0.241)	(0.179)	(0.179)
Constant	−4.501***	−3.813***	−3.381**	−2.703*
	(1.113)	(1.080)	(1.059)	(1.057)
Control variables	✓	✓	✓	✓
AIC	2918.635	2917.346	2932.614	2925.328
BIC	3028.794	3027.506	3042.774	3035.488
Log Likelihood	-1447.317	-1446.673	-1454.307	-1450.664
N	71681	71681	71681	71681

Notes: The outcome in each model is whether any violation occurred. In each model, all the covariates (with the exception of the time until election) are lagged by the specified number of years (0, 1, 2, or 3). Standard errors are presented parentheses (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$). In all models, the sample used has no missing values for all the lags, which reduces the total number of potential treaty-year observations to 71, 681.

Alternative Logistic Regression Models

The first alternative modeling specification we utilize is a zero-inflated, or rare events, logistic regression "which helps produce unbiased estimates with greater precision" (King and Zeng 2001). Table A.3 shows that the variable of interest, level of democracy, is reliably and positively related to BIT violations in all models when time until election equals zero. The statistical reliability and the substantive interpretation of the results do not differ from the logistic regression results found in Table A.1.

Table A.3: Rare events logistic regression estimates.

	Dependent variable:			
	Any Violations			
	(1)	(2)	(3)	(4)
Polity	0.033*	0.046**		
	(0.017)	(0.018)		
Anocracy			1.010***	0.747*
			(0.280)	(0.327)
Democracy			1.226***	1.353***
			(0.304)	(0.331)
Time until election		0.183**		0.226
		(0.065)		(0.210)
Polity*Time until election		0.018*		
		(0.009)		
Anocracy*Time until election				−0.269
				(0.231)
Democracy*Time until election				0.182
				(0.229)
Control variables				
Political constraints	−0.768	−0.791	−1.147*	−1.168*
	(0.491)	(0.490)	(0.461)	(0.464)
log(GDP)	−0.092**	−0.105**	−0.070	−0.083*
	(0.035)	(0.036)	(0.037)	(0.037)
Δ GDP	0.021**	0.021**	0.018**	0.018**
	(0.007)	(0.007)	(0.007)	(0.007)
Trade (% of GDP)	−0.005*	−0.005*	−0.005*	−0.006**
	(0.002)	(0.002)	(0.002)	(0.002)
FDI, net inflows (% of GDP)	0.004	0.005	0.005	0.005
	(0.009)	(0.009)	(0.009)	(0.009)
Natural resource rents (% of GDP)	0.011	0.010	0.017*	0.017*
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	−3.206***	−2.642**	−4.537***	−3.936***
	(0.925)	(0.953)	(1.001)	(1.044)
AIC	3014.593	2998.084	3000.918	2979.041
BIC	3088.518	3090.490	3084.084	3089.929
Log Likelihood	-1499.297	-1489.042	-1491.459	-1477.521
N	76160	76160	76160	76160

Notes: The outcome indicates whether any violation occurred. Standard errors are presented parentheses (*** p < 0.001, ** p < 0.01, * p < 0.05). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those treaty-years there is no BIT present, leaving a total of 76,160 potential violation-years.

We also perform an ordinal logistic regression to capture whether democratic elections impact the magnitude of violations. Formally, the ordered logistic model is specified as $y^* = X'\beta + \epsilon$, such that $y = 0$ if $y^* \leq \mu_1$; 1 if $\mu_1 < y^* \leq \mu_2$; 2 if $\mu_2 < y^* \leq \mu_3$; 3 if $\mu_3 < y^* \leq \mu_4$; 4 if $\mu_4 < y^*$, and y^* represents the latent variable that captures propensity to violate an investment treaty, and y represents the observed outcome. Each

μ captures the cut-off between categories, X is the vector of covariates, and β is the vector of coefficients. The exponential transformation, $\frac{Pr(y_i>j)}{Pr(y_i\leq j)} = e^{-\mu_j + y^*}$, translates to the proportional probability, or odds, of being above a particular category. The estimated coefficients of the ordinal logit are displayed in Table A.4, which show a similar story: democratic governance influences the propensity to violate more treaties as election time nears.

Table A.4: Ordered multinomial logistic regression estimates.

	Dependent variable:			
	Any Violations			
	(1)	(2)	(3)	(4)
Polity	0.033*	0.046*		
	(0.017)	(0.018)		
Anocracy			1.015***	0.736*
			(0.280)	(0.327)
Democracy			1.242***	1.349***
			(0.304)	(0.331)
Time until election		0.195**		0.293
		(0.065)		(0.210)
Polity*Time until election		0.017		
		(0.009)		
Anocracy*Time until election				−0.326
				(0.231)
Democracy*Time until election				0.120
				(0.229)
Control variables				
Political constraints	−0.761	−0.780	−1.135*	−1.150*
	(0.491)	(0.490)	(0.461)	(0.464)
log(GDP)	−0.093**	−0.107**	−0.071	−0.084*
	(0.035)	(0.036)	(0.037)	(0.037)
Δ GDP	0.020**	0.019**	0.016*	0.017*
	(0.007)	(0.007)	(0.007)	(0.007)
Trade (% of GDP)	−0.005*	−0.005*	−0.005*	−0.006**
	(0.002)	(0.002)	(0.002)	(0.002)
FDI, net inflows (% of GDP)	0.001	0.001	0.001	0.001
	(0.009)	(0.009)	(0.009)	(0.009)
Natural resource rents (% of GDP)	0.011	0.009	0.017*	0.017*
	(0.007)	(0.007)	(0.007)	(0.007)
Constant	−3.206***	−2.642**	−4.537***	−3.936***
	(0.925)	(0.953)	(1.001)	(1.044)
AIC	3182.312	3165.796	3168.635	3146.763
BIC	3283.958	3285.924	3279.522	3285.372
Log Likelihood	-1580.156	-1569.898	-1572.318	-1558.382
N	76160	76160	76160	76160

Notes: The outcome indicates whether any violation occurred. Standard errors are presented parentheses (*** p < 0.001, ** p < 0.01, * p < 0.05). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those treaty-years there is no BIT present, leaving a total of 76,160 potential violation-years.

The estimated coefficients of the negative binomial regression are found in Table A.5. We regress the count of BIT violations on the polity score and the binned measure of democracy, including the same relevant covariates mentioned in the manuscript. The estimated coefficients do not differ drastically from the other robustness models, nor from the logit estimates presented in the main analysis, which further validates our central finding that democracies are less likely to violate international investment obligations only when elections are proximate.

Table A.5: Negative binomial regression estimates.

	Dependent variable:			
	Violations			
	(1)	(2)	(3)	(4)
Polity	0.047**	0.061**		
	(0.018)	(0.019)		
Anocracy			1.279***	1.125**
			(0.300)	(0.346)
Democracy			1.495***	1.662***
			(0.326)	(0.353)
Time until election		0.203**		0.245
		(0.068)		(0.199)
Polity*Time until election		0.018*		
		(0.009)		
Anocracy*Time until election				−0.207
				(0.228)
Democracy*Time until election				0.177
				(0.220)
Control variables				
Political constraints	−0.682	−0.772	−0.988*	−1.096*
	(0.520)	(0.520)	(0.489)	(0.492)
log(GDP)	−0.094*	−0.108**	−0.062	−0.075
	(0.038)	(0.038)	(0.039)	(0.040)
Δ GDP	0.060***	0.058***	0.066***	0.063***
	(0.011)	(0.011)	(0.011)	(0.011)
Trade (% of GDP)	−0.006**	−0.007**	−0.006**	−0.007**
	(0.002)	(0.002)	(0.002)	(0.002)
FDI, net inflows (% of GDP)	−0.005	−0.003	−0.005	−0.004
	(0.012)	(0.012)	(0.012)	(0.012)
Natural resource rents (% of GDP)	0.016*	0.014	0.023**	0.022**
	(0.007)	(0.007)	(0.008)	(0.008)
Constant	−3.206***	−2.642**	−4.537***	−3.936***
	(0.925)	(0.953)	(1.001)	(1.044)
AIC	3170.387	3153.374	3155.091	3135.515
BIC	3253.553	3255.021	3247.497	3255.643
Log Likelihood	-1576.194	-1565.687	-1567.546	-1554.757
N	76160	76160	76160	76160

Notes: The outcome indicates whether any violation occurred. Standard errors are presented parentheses (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those treaty-years there is no BIT present, leaving a total of 76,160 potential violation-years.

Heckman Selection Models

One of the possible selection processes that may make democracies more likely to appear as targets is that democracies are more likely to sign BITs, or be signatories to the ICSID convention in the first place, which is a necessary condition for being accused of a treaty violation. Therefore, we model the unobserved structural process of investment treaty violation such that y_i^{S*} is the latent decision of selection for each country to be in a bilateral treaty agreement, $y_i^{S*} = x_i^S \beta^{S\prime} + \epsilon_i^S$. The latent outcome, y_i^{O*}, is the whether a violation occurred given that a treaty was in place, $y_i^{O*} = x_i^O \beta^{O\prime} + \epsilon_i^O$. x_i^S and x_i^O are matrices of explanatory variables for the selection and outcome equation, though the explanatory variables are the same for both equations. We observe the outcome only if the latent decision to be in a bilateral treaty (when y^{S*} is positive), as seen in the equations.

$$y_i^S = \begin{cases} 0 \; if \; y_i^{S*} < 0 \\ 1 \text{ otherwise} \end{cases}$$

$$y_i^O = \begin{cases} 0 \; if \; y_i^S = 0 \\ y_i^{O*} \text{ otherwise} \end{cases}$$

Table A.6 reports the results of the first stage selection equation indicating whether any treaty was signed. The estimates and substantive findings from the second equation in Model 2 of Table A.6 do not differ substantially from the results presented in the manuscript in Table A.1.

Table A.6: Heckman selection regression estimates.

	Dependent variable:	
	Treaty in force (1=Yes) Selection Equation	Any violations (1=violations>0 Outcome Equation
	(1)	(2)
Anocracy	−0.274***	0.022***
	(0.010)	(0.004)
Democracy	−0.306***	0.026***
	(0.010)	(0.004)
Time until election	0.052***	−0.004***
	(0.003)	(0.001)
Anocracy*Time until election	−0.033***	0.002**
	(0.005)	(0.001)
Democracy*Time until election	−0.041***	0.004***
	(0.004)	(0.001)
Control variables		
Political constraints	0.356***	−0.030***
	(0.015)	(0.005)
log(GDP)	0.183***	−0.013***
	(0.001)	(0.002)
Δ GDP	0.001	0.0001
	(0.0005)	(0.0001)
Trade (% of GDP)	0.002***	−0.0002***
	(0.00005)	(0.00003)
FDI, net inflows (% of GDP)	0.005***	−0.0003***
	(0.0003)	(0.0001)
Natural resource rents (% of GDP)	−0.006***	0.0005***
	(0.0002)	(0.0001)
Constant	−5.577***	0.468***
	(0.031)	(0.086)
N	523035	76160

Notes: Probit regression coefficients shown with standard errors in parentheses (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those treaty-years there is no BIT present, leaving a total of 76,160 potential violation-years.

Alternative Investor-Dispute Data

We have two primary concerns with our data on potential violations. First, we employ an alternate dataset from Wellhausen (2016) that contains "any public instance in which a foreign investor sues a sovereign state in an international tribunal. Thus, the database includes investment treaty arbitration, which is triggered by a treaty such as a Bilateral Investment Treaty (BIT), as well as other investment arbitrations brought under Investor-State Dispute Settlement (ISDS) based on contractual provisions or domestic rules" (Codebook Wellhausen , 1). This helps alleviate concerns that our findings do not only apply to potential violations via ICSID, but also other arbitration venues.

Another benefit of the database is that it only includes arbitrations that are actually filed. "Thus, if a foreign investor offers a public notice of intent to file but does not actually file, it is not included. This distinction is clear when it comes to arbitrations filed at ICSID. It is less clear when arbitrations are filed at other less public venues" (2). This increases our ability to determine whether the data generating process for potential violations is relatively similar for cases that are eventually filed.

Table A.7: Logistic regression estimates using ISDS data from Wellhausen 2016.

Table A.7: Logistic regression estimates using ISDS data from Wellhausen 2016.

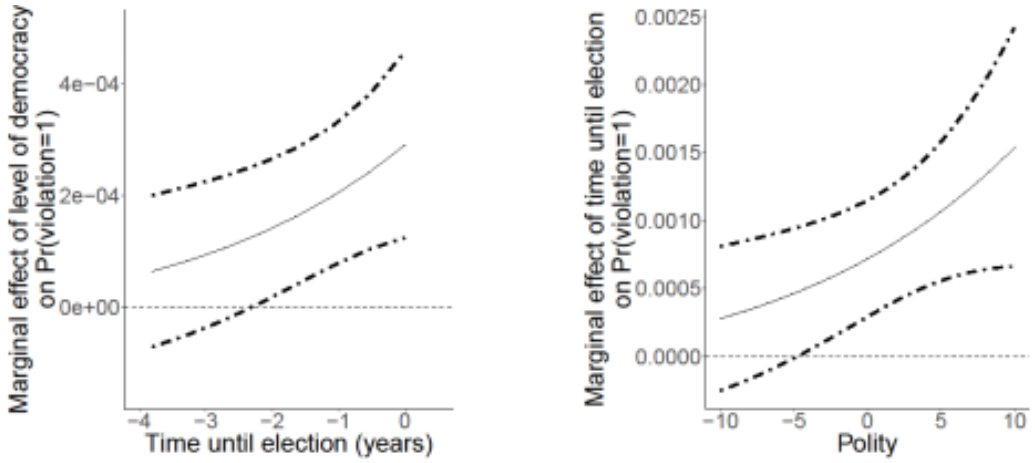
	Dependent variable:			
	Violations			
	(1)	(2)	(3)	(4)
Polity	0.042***	0.047***		
	(0.013)	(0.013)		
Time until election		0.163***		0.124
		(0.048)		(0.119)
Polity*Time until election		0.007		
		(0.006)		
Anocracy			1.371***	1.342***
			(0.215)	(0.247)
Democracy			1.535***	1.634***
			(0.238)	(0.259)
Anocracy*Time until election				−0.022
				(0.143)
Democracy*Time until election				0.124
				(0.134)
Control variables				
Political constraints	−0.690	−0.697	−0.989**	−1.028**
	(0.362)	(0.361)	(0.338)	(0.339)
log(GDP)	−0.118***	−0.131***	−0.085**	−0.096***
	(0.027)	(0.027)	(0.028)	(0.028)
Δ GDP	0.009	0.008	0.006	0.005
	(0.007)	(0.007)	(0.006)	(0.006)
Trade (% of GDP)	−0.005**	−0.005**	−0.004**	−0.005**
	(0.002)	(0.002)	(0.002)	(0.002)
FDI, net inflows (% of GDP)	−0.002	−0.001	−0.001	−0.001
	(0.007)	(0.007)	(0.007)	(0.007)
Natural resource rents (% of GDP)	0.022***	0.022***	0.031***	0.030***
	(0.005)	(0.005)	(0.005)	(0.005)
Constant	−2.076**	−1.553*	−3.990***	−3.532***
	(0.694)	(0.714)	(0.757)	(0.783)
AIC	4891.744	4876.249	4850.600	4835.885
BIC	4965.668	4968.655	4933.766	4946.772
Log Likelihood	−2437.872	−2428.125	−2416.300	−2405.943
N	76160	76160	76160	76160

Notes: Logistic regression coefficients shown with standard errors in parentheses in all models (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those there is no BIT present, leaving a total of 76,160 potential violator-years.

Notes: Logistic regression coefficients shown with standard errors in parentheses (*** p < 0.001, ** p < 0.01, * p < 0.05). In all models, the total number of potential treaty-year observations is 523,035, though in 446,875 of those treaty-years there is no BIT present, leaving a total of 76,160 potential violation-years.

The results, in fact, more strongly suggest that the marginal effect of the credibility of elections is conditional on the time to the next election. For instance, we can see that a similar pattern from Figure 2 in Figure A.2. Moreover, Table A.8 estimates the percent of cases that are actually filed which are lost. The results from these models strengthens our argument that (1) potential violations may be a good indicator of actual violations, and (2) democratic governments are more likely to be sued as elections near.

Figure A.2: Change in the predicted probability of violation given the interaction between the continuous measure of democracy and time until election (using ISDS data from Wellhausen (2016).



Notes: We cannot estimate the marginal effect as $\hat{\delta}_1 = \hat{\beta}_1 + \hat{\beta}_2 x_2$ because the size of $\hat{\delta}_1$ does not convey any intuitive interpretation of the size of the effect of a given moderating variable. Therefore, we estimate the change in the predicted probability, $\hat{y}$, given a shift in the moderator, while also varying x_2 (plotted along the x-axis). 95% confidence intervals are shown.

Table A.8: Logistic regression, estimates the percent of cases that are actually led which are lost, ISDS data from Wellhausen 2016.

	Dependent variable:
	Lost cases/Total cases
	(1)
Polity	0.049*
	(0.022)
Political contraints	−1.260*
	(0.592)
log(GDP)	−0.116
	(0.059)
Δ GDP	0.013
	(0.018)
Trade (% of GDP)	−0.008**
	(0.003)
FDI, net inflows (% of GDP)	0.002
	(0.020)
Natural resource rents (% of GDP)	0.001
	(0.011)
Constant	2.785
	(1.542)
AIC	504.437
BIC	536.247
Log Likelihood	-244.218
N	394

Notes: Logistic regression coefficients shown with standard errors in parentheses (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$). In all models, the total number of potential-treaty year observations is 394.

Assessing and Addressing Missingness

We employ case-wise deletion in the manuscript, and retain approximately 90% of observations. Figures A.3 and A.4 display the missingness in our covariates for our time period of interest from 1990-2013. To address this missingness, we re-estimate each regression using a random subset of the data with the requirement that at least 95% of observations are complete cases. The results and interpretations do not differ from those presented in the primary analysis or Appendix.

Figure A.3: Missingness in predictors by potential violator from 1990-2013 (Afghanistan through Latvia).

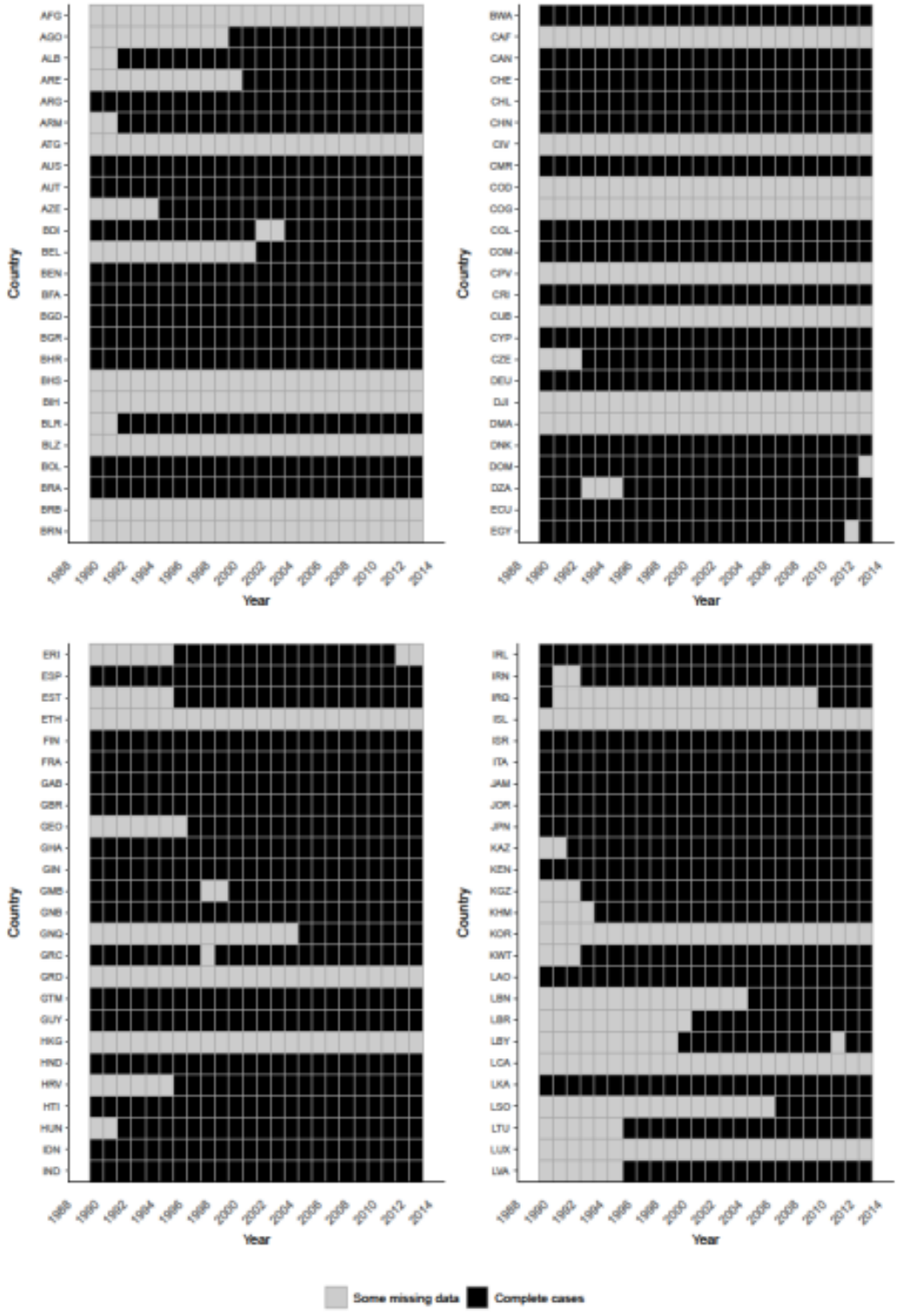
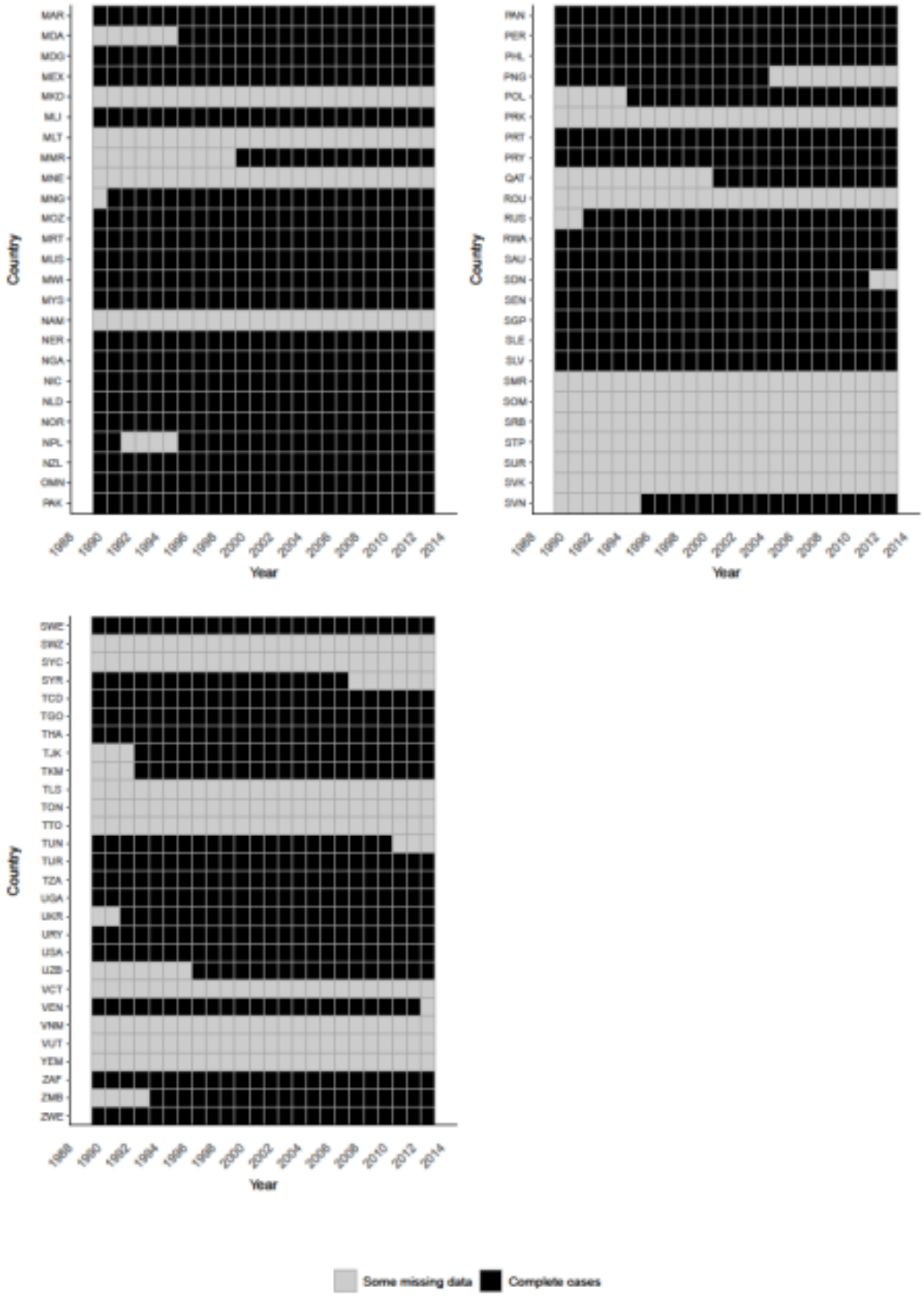


Figure A.4: Missingness in predictors by potential violator from 1990-2013 (Morocco through Zimbabwe).



To create samples that accurately represent the complete data set, we mimic the rarity of the outcome. Therefore, when we randomly subset approximately 10% of the full data set for each sample, we subset approximately 400 observations with a zero outcome. As such, the first model drops 24 observations, and the second and third drop 35 due to data unavailability. The low number of dropped cases relative to the size of the sample makes the concern for biased estimates fairly minimal. Each panel in Figure A.5 displays the distribution of each variable from the three randomly selected subsets used for the regression analyses in Table A.2.

Importantly, no sample differs dramatically with regards to outliers, and all samples match the overall empirical distribution of each variable in the total data set (seen in Figure A.1). Moreover, the results of regression models using the samples are statistically and reliable similar to those reported in Table A.2

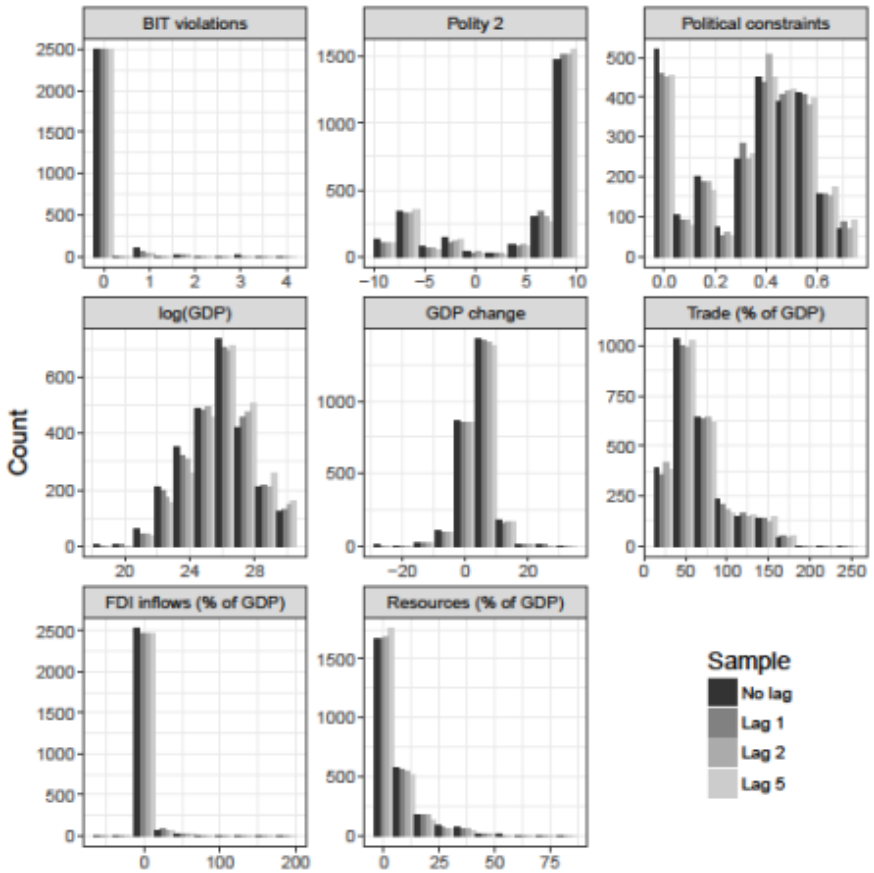



Figure A.5: Distribution of each variable by sample.