Supporting Information: Democratization, Elections, and Public Goods: The Evidence from Deforestation

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Introduction

The following sections provide supporting additional tests of the hypotheses described in the main text, as well as several mechanism tests. Each of the tables show the results of three tests: one with all controls and no unit fixed effects (to observe between variation), one with all controls and two-way fixed effects (results show in main figures in the text) and a final column with no controls other than previous level of forest cover and two-way fixed effects. The final column preserves a larger number of observations for which control variables are not available and generally shows that the controls don't have much effect on the main coefficient of interest.

1 Tables for text figures

This section provides the regression tables associated with the figures in the main paper.

Table 1:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
democracy	-0.136^{*}	-0.154^{**}	-0.161^{*}
	(0.070)	(0.078)	(0.087)
PCGDP	0.002	-0.012	
	(0.002)	(0.010)	
delta PCGDP	-0.027	-0.033	
	(0.025)	(0.025)	
Population growth	-0.045	-0.144^{**}	
	(0.033)	(0.060)	
pct employed in agriculture	-0.008	-0.048^{**}	
	(0.027)	(0.023)	
chng in ag employment	0.031^{*}	0.017	
	(0.017)	(0.013)	
forest	0.001	0.017^{***}	0.023^{**}
	(0.001)	(0.005)	(0.011)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	423,172	423,172	816,361
Adjusted R^2	0.032	0.251	0.168
Residual Std. Error	0.642 (df = 423131)	0.565 (df = 403926)	0.586 (df = 792599)

Note: *p<0.1; **p<0.05; ***p<0.01

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Table 2:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.021*	−0.020***	−0.011
	(0.011)	(0.005)	(0.013)
PCGDP	−0.002	−0.015	
	(0.001)	(0.012)	
delta PCGDP	0.019	0.017	
	(0.021)	(0.016)	
Population growth	−0.050	−0.152**	
	(0.037)	(0.061)	
pct employed in agriculture	−0.009	−0.053**	
	(0.030)	(0.026)	
chng in ag employment	0.036**	0.024*	
	(0.015)	(0.014)	
forest	0.001	0.018***	0.024**
	(0.0005)	(0.006)	(0.011)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	425,965	425,965	838,285
Adjusted R^2	0.026	0.244	0.162
Residual Std. Error	0.646 (df = 425924)	0.569 (df = 406591)	0.585 (df = 814298)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	−0.020***		
	(0.005)		
contested election		−0.046***	
		(0.008)	
close election			−0.062***
			(0.022)
PCGDP	−0.015	−0.014	−0.015
	(0.012)	(0.012)	(0.012)
delta PCGDP	0.017	0.014	0.015
	(0.016)	(0.016)	(0.017)
Population growth	−0.152**	−0.148**	−0.149**
	(0.061)	(0.060)	(0.059)
pct employed in agriculture	−0.053**	−0.056**	−0.054**
	(0.026)	(0.027)	(0.027)
chng in ag employment	0.024*	0.023*	0.022*
	(0.014)	(0.012)	(0.013)
forest	0.018***	0.021***	0.021***
	(0.006)	(0.006)	(0.006)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	425,965	414,244	389,875
Adjusted R^2	0.244	0.252	0.246
Residual Std. Error	0.569 (df = 406591)	0.572 (df = 394870)	0.569 (df = 370501)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4:

| | Dependent variable: | | |
| | Forest Cover Change | | |
	(1)	(2)	(3)
electoral closeness	−0.032***	−0.049**	−0.058***
	(0.010)	(0.021)	(0.014)
PCGDP	0.003	−0.012	
	(0.002)	(0.009)	
delta PCGDP	0.006	0.046	
	(0.048)	(0.045)	
Population growth	−0.051*	−0.166*	
	(0.027)	(0.098)	
pct employed in agriculture	−0.003	0.032	
	(0.025)	(0.057)	
chng in ag employment	0.089	−0.115	
	(0.063)	(0.122)	
forest	0.002	−0.0001	0.015
	(0.001)	(0.007)	(0.016)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	63,012	63,012	126,571
Adjusted R^2	0.077	0.254	0.239
Residual Std. Error	0.601 (df = 62975)	0.541 (df = 46146)	0.513 (df = 104641)

Note: *p<0.1; **p<0.05; ***p<0.01

2 Legislative vs Exexutive elections

Democracies are defined by Boix, Miller and Rosato (2013). Because the competition variable includes both executive and legislative elections, the legislative and executive competition variables are created by interacting competition with an indicator for whether or not ther was a legislative or executive election in that year. Coefficients may be similar because of the large number of years in which legislative and executive elections co-occur.

Table 5:

	Dependent variable:	
	Forest Cover Change	
Leg competition (10pct increase)	−0.046** (0.020)	
Exec competition (10pct increase)		−0.047** (0.022)
PCGDP	−0.013 (0.009)	−0.040 (0.028)
delta PCGDP	0.061 (0.050)	0.004 (0.090)
Population growth	−0.158 (0.097)	−0.096 (0.067)
pct employed in agriculture	0.014 (0.052)	−0.072 (0.072)
chng in ag employment	−0.036 (0.148)	0.104 (0.129)
forest	0.00004 (0.007)	0.003 (0.013)
Unit-year effects?	Yes	Yes
Unit time trends?	Yes	Yes
Observations	62,997	46,533
Adjusted R^2	0.255	0.248
Residual Std. Error	0.540 (df = 46136)	0.519 (df = 32207)
Note:		*$p<0.1$; **$p<0.05$; ***$p<0.01$

3 Incumbent victory vs loss

This section checks whether elections with an incumbent victory are different from elections with an incumbent loss. The figures below are collapsed by country-year. This greatly reduces power, but prevents single elections in countries with many forest cells from dominating the fit.

As a result, the figures are more suggestive than clear-cut evidence.

Figure 1: Incumbent margin of victory and forest cover loss, linear fit
This suggests that the difference between close elections and non-close elections is driven by years in which the incumbent was victorious rather than years in which the incumbent lost. Note however that there is neither enough power to distinguish the rate of forest cover loss at the break in the running variable, nor is there enough power to confirm that the slope of the fit is positive in elections in which the incumbent won.
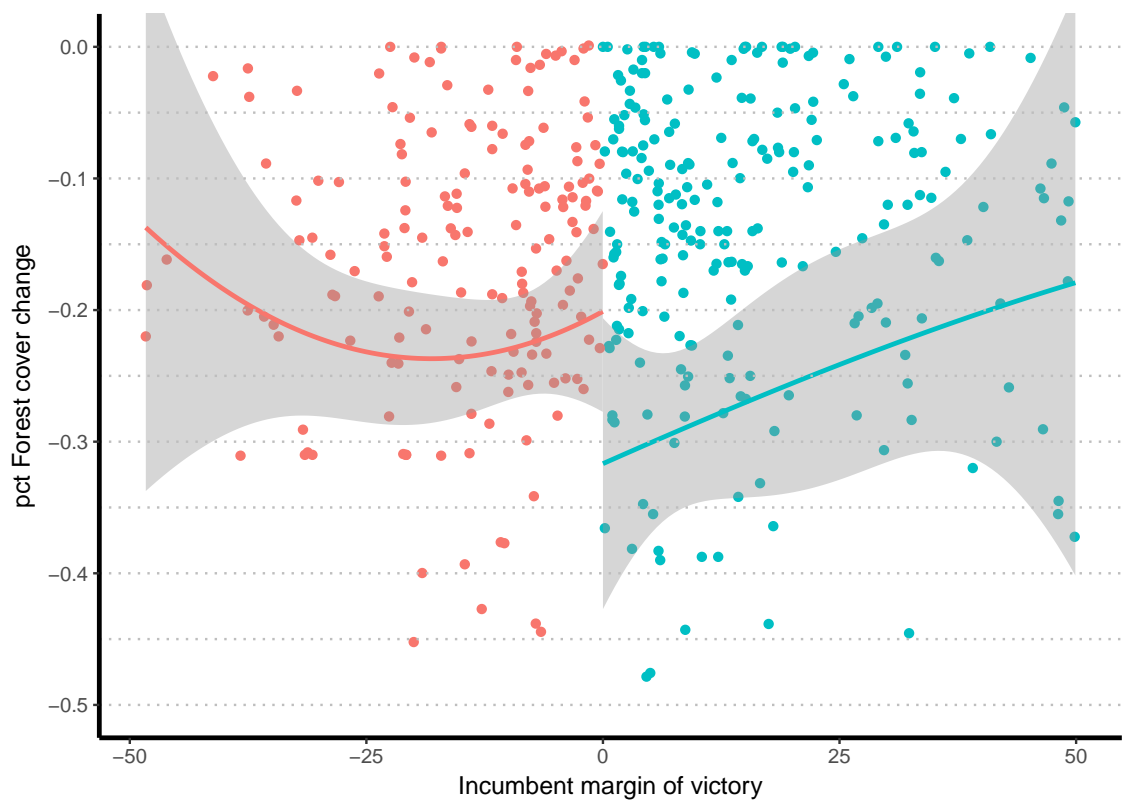
Figure 2: Incumbent margin of victory and forest cover loss, loess by win/loss
A loess fit confirms the general pattern observed in the linear fit above, but is unable to provide
statistical evidence that a close victory is distinct from a close loss, nor that close incumbent victories are
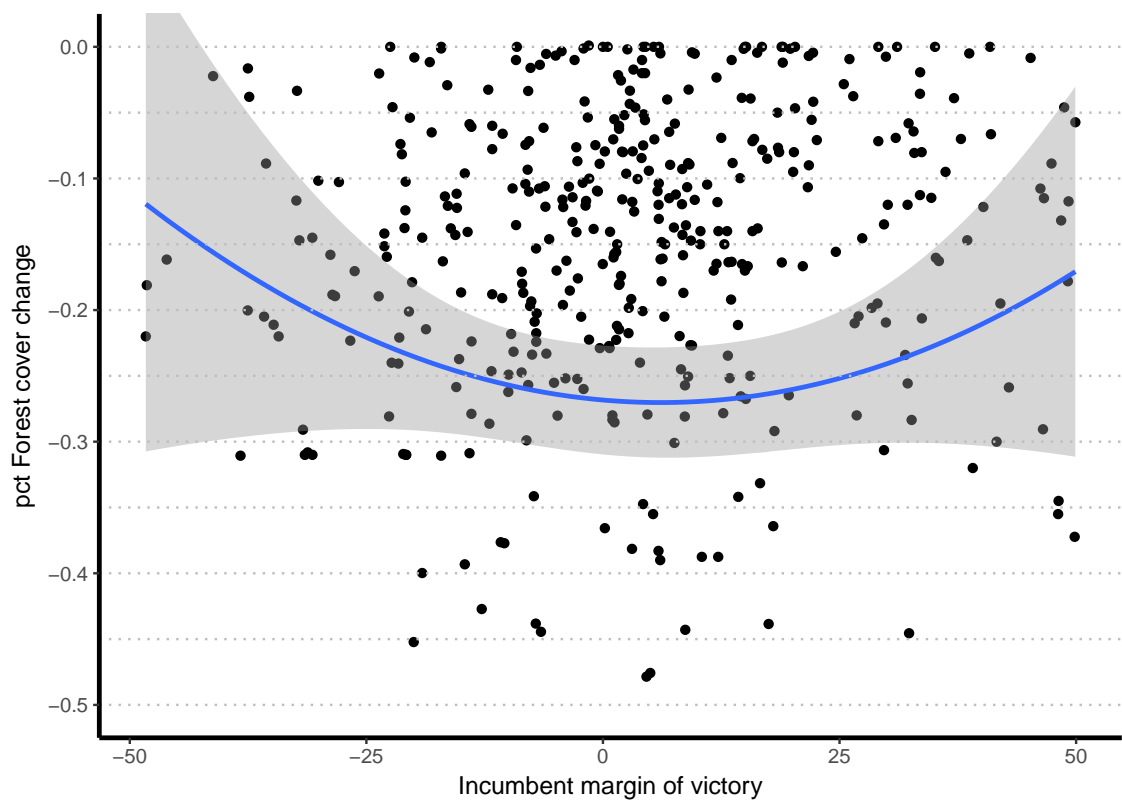different from non-close incumbent victories.

Figure 3: Incumbent margin of victory and forest cover loss, loess
Here a single loess is fit to all of the data, suggesting that the most forest loss occurs in elections in which the margin of victory is near 0, but once again lacks sufficient power to distinguish the fit from a horizontal line.

Table 6: Margin of victory given incumbent win

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
electoral closeness	−0.031***	−0.035*	−0.056***
	(0.010)	(0.018)	(0.016)
PCGDP	0.001	−0.033*	
	(0.004)	(0.019)	
delta PCGDP	0.059	0.335	
	(0.158)	(0.277)	
Population growth	−0.039	−0.163*	
	(0.033)	(0.098)	
pct employed in agriculture	−0.025	0.014	
	(0.028)	(0.065)	
chng in ag employment	0.193**	−0.082	
	(0.083)	(0.171)	
forest	0.002	−0.003	0.009
	(0.001)	(0.021)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	30,692	30,692	52,521
Adjusted R^2	0.078	0.138	0.085
Residual Std. Error	0.707 (df = 30655)	0.684 (df = 19978)	0.729 (df = 36628)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6 shows that in a subset of observations limited to incumbent victories, margin of victory has a nearly identical effect to when all observations are included. Note that column (3) may be the best test here–there is little reason to think that any of the control variables would confound a comparison of one election year to another.

Table 7: Margin of victory given incumbent loss

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
electoral closeness	−0.008	−0.004	0.012
	(0.027)	(0.010)	(0.011)
PCGDP	0.003**	0.002	
	(0.002)	(0.003)	
delta PCGDP	−0.018	0.011	
	(0.038)	(0.030)	
Population growth	−0.020	−0.012	
	(0.040)	(0.037)	
pct employed in agriculture	0.052	−0.151*	
	(0.057)	(0.078)	
chng in ag employment	0.072	0.093	
	(0.108)	(0.085)	
forest	0.002	0.034***	0.029***
	(0.002)	(0.005)	(0.009)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	32,320	32,320	74,050
Adjusted R^2	0.118	0.601	0.695
Residual Std. Error	0.468 (df = 32284)	0.315 (df = 19257)	0.234 (df = 56397)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 7 shows that in years in which the incumbent lost electoral closeness does not have a distinguishable effect on forest cover change.

Table 8:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
electoral closeness	−0.034***	−0.049**	−0.057***
	(0.010)	(0.021)	(0.015)
incumbent win?	−0.020	0.001	0.016
	(0.068)	(0.042)	(0.056)
PCGDP	0.003	−0.012	
	(0.002)	(0.009)	
delta PCGDP	0.006	0.046	
	(0.049)	(0.045)	
Population growth	−0.049*	−0.166*	
	(0.029)	(0.098)	
pct employed in agriculture	−0.004	0.032	
	(0.025)	(0.057)	
chng in ag employment	0.093	−0.115	
	(0.058)	(0.120)	
forest	0.002	−0.0001	0.015
	(0.001)	(0.007)	(0.016)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	63,012	63,012	126,571
Adjusted R^2	0.077	0.254	0.239
Residual Std. Error	0.601 (df = 62974)	0.541 (df = 46145)	0.513 (df = 104640)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 8 shows that whether or not an incumbent was victorious does not have an independent effect on forest loss.

Table 9:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
Incumbent win	−0.047***	−0.079***	−0.159***
	(0.005)	(0.005)	(0.008)
Constant	−0.211***	−0.144***	−0.126***
	(0.003)	(0.004)	(0.004)
Bandwidth	20	10	5
No. Elections	257	174	87
Observations	57,498	25,960	15,372
Note:		$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

Finally, a series of simple t-tests that compare close victoris to close losses shows that as the bandwidth decreases from all elections within 20 percentage points of a tie to 10 points to 5 points, the difference between an incumbent win and an incumbent loss becomes more pronounced.

4   Control for neighboring cells' forest

This section repeats the tests from the paper while controlling for the average level of forest in all queen's case (horizontal, vertical, and diagonal) neighbors in the previous year. Results remain unchanged in all cases.

Table 10:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
democracy	-0.135^{*}	-0.148^{*}	-0.138^{*}
	(0.069)	(0.077)	(0.083)
PCGDP	0.002	-0.008	
	(0.002)	(0.009)	
delta PCGDP	-0.031	-0.022	
	(0.025)	(0.022)	
Population growth	-0.042	-0.105^{**}	
	(0.030)	(0.042)	
pct employed in agriculture	-0.010	-0.035^{*}	
	(0.026)	(0.019)	
chng in ag employment	0.032^{**}	0.008	
	(0.016)	(0.012)	
forest	0.005^{**}	0.042^{***}	0.048^{***}
	(0.002)	(0.009)	(0.013)
neighbor forest	-0.004^{**}	-0.037^{***}	-0.036^{***}
	(0.002)	(0.006)	(0.007)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	423,172	423,172	816,361
Adjusted R^2	0.038	0.274	0.188
Residual Std. Error	0.640 (df = 423130)	0.556 (df = 403925)	0.579 (df = 792598)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 11:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	−0.023**	−0.019***	−0.011
	(0.011)	(0.006)	(0.012)
PCGDP	−0.002	−0.011	
	(0.001)	(0.010)	
delta PCGDP	0.014	0.026	
	(0.020)	(0.018)	
Population growth	−0.047	−0.113***	
	(0.034)	(0.043)	
pct employed in agriculture	−0.011	−0.039*	
	(0.028)	(0.024)	
chng in ag employment	0.037**	0.015	
	(0.015)	(0.014)	
forest	0.004**	0.043***	0.049***
	(0.002)	(0.009)	(0.013)
neighbor forest	−0.004**	−0.037***	−0.037***
	(0.002)	(0.006)	(0.007)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	425,965	425,965	838,285
Adjusted R^2	0.031	0.267	0.183
Residual Std. Error	0.644 (df = 425923)	0.560 (df = 406590)	0.578 (df = 814297)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 12:

	(1)	(2)	(3)
		Dependent variable:	
		Forest Cover Change	
election year	−0.019***		
	(0.006)		
contested election		−0.041***	
		(0.009)	
close election			−0.059***
			(0.022)
PCGDP	−0.011	−0.010	−0.011
	(0.010)	(0.010)	(0.010)
delta PCGDP	0.026	0.023	0.025
	(0.018)	(0.018)	(0.019)
Population growth	−0.113***	−0.110***	−0.113***
	(0.043)	(0.042)	(0.042)
pct employed in agriculture	−0.039*	−0.042*	−0.040*
	(0.024)	(0.024)	(0.024)
chng in ag employment	0.015	0.014	0.013
	(0.014)	(0.013)	(0.013)
forest	0.043***	0.046***	0.045***
	(0.009)	(0.009)	(0.009)
neighbor forest	−0.037***	−0.037***	−0.036***
	(0.006)	(0.006)	(0.006)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	425,965	414,244	389,875
Adjusted R^2	0.267	0.274	0.267
Residual Std. Error	0.560 (df = 406590)	0.564 (df = 394869)	0.561 (df = 370500)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 13:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.031***	−0.039**	−0.045***
	(0.010)	(0.016)	(0.010)
PCGDP	0.002	−0.008	
	(0.002)	(0.007)	
delta PCGDP	0.004	0.037	
	(0.048)	(0.043)	
Population growth	−0.048*	−0.119*	
	(0.026)	(0.071)	
pct employed in agriculture	−0.004	0.035	
	(0.024)	(0.047)	
chng in ag employment	0.075	−0.107	
	(0.059)	(0.106)	
forest	0.005*	0.029***	0.037***
	(0.002)	(0.007)	(0.014)
neighbor forest	−0.004**	−0.045***	−0.033***
	(0.002)	(0.008)	(0.012)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	63,012	63,012	126,571
Adjusted R^2	0.082	0.292	0.256
Residual Std. Error	0.600 (df = 62974)	0.527 (df = 46145)	0.507 (df = 104640)

Note: *p<0.1; **p<0.05; ***p<0.01

5 Types of forest

This section considers the three main classes of forest seperately: tropical forests, consisting mostly of rainforests found near the equator, temperate forests in the temperate zone, and boreal forests near the poles. Figures 4, 5, and 6 show the distribution of these types of forest.
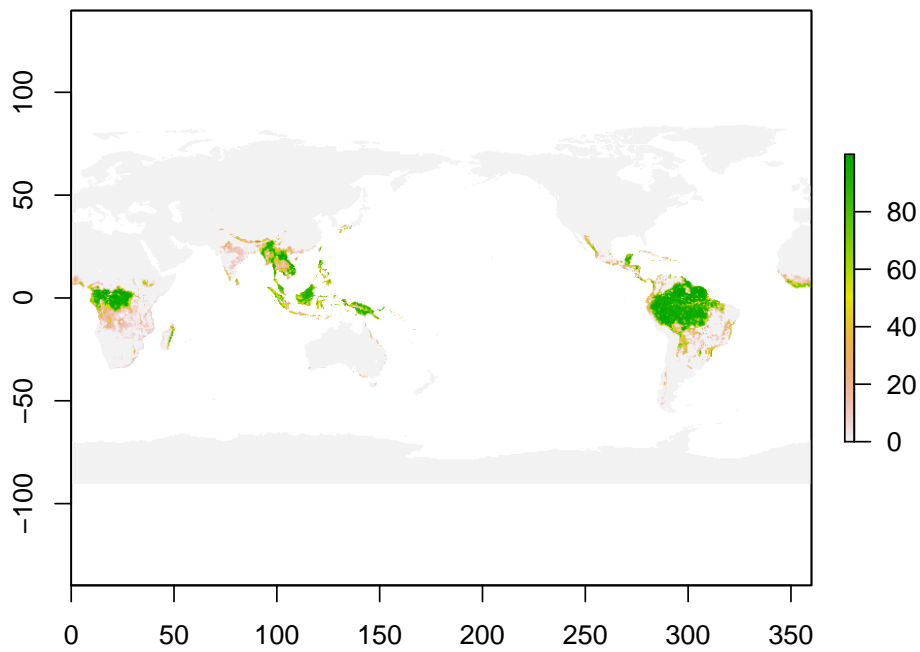
5.1 Tropical

Figure 4: Distribution of tropical forest in 1970

Table 14:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
democracy	−0.149**	−0.090	−0.244**
	(0.073)	(0.056)	(0.103)
PCGDP	−0.012	−0.116***	
	(0.013)	(0.036)	
delta PCGDP	−0.062	0.075**	
	(0.065)	(0.036)	
Population growth	−0.044*	−0.078***	
	(0.026)	(0.029)	
pct employed in agriculture	−0.020	−0.075***	
	(0.019)	(0.026)	
chng in ag employment	0.033***	0.036**	
	(0.009)	(0.018)	
forest	0.002**	0.019***	0.027**
	(0.001)	(0.007)	(0.012)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	246,266	246,266	318,401
Adjusted R^2	0.033	0.272	0.161
Residual Std. Error	0.800 (df = 246225)	0.694 (df = 237871)	0.883 (df = 309174)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 15:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	−0.016	−0.006	−0.032
	(0.028)	(0.015)	(0.035)
PCGDP	−0.019	−0.122***	
	(0.015)	(0.036)	
delta PCGDP	−0.036	0.085***	
	(0.056)	(0.033)	
Population growth	−0.041	−0.083***	
	(0.028)	(0.028)	
pct employed in agriculture	−0.026	−0.080***	
	(0.023)	(0.028)	
chng in ag employment	0.039***	0.038**	
	(0.009)	(0.018)	
forest	0.002**	0.020***	0.028**
	(0.001)	(0.007)	(0.012)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	246,890	246,890	324,100
Adjusted R^2	0.027	0.270	0.156
Residual Std. Error	0.801 (df = 246849)	0.694 (df = 238492)	0.878 (df = 314804)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 16:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.006		
	(0.015)		
contested election		−0.019	
		(0.019)	
close election			−0.029
			(0.040)
PCGDP	−0.122***	−0.121***	−0.117***
	(0.036)	(0.037)	(0.036)
delta PCGDP	0.085***	0.083**	0.078**
	(0.033)	(0.032)	(0.034)
Population growth	−0.083***	−0.085***	−0.088***
	(0.028)	(0.028)	(0.029)
pct employed in agriculture	−0.080***	−0.082***	−0.080***
	(0.028)	(0.029)	(0.029)
chng in ag employment	0.038**	0.038*	0.030*
	(0.018)	(0.019)	(0.016)
forest	0.020***	0.023***	0.022***
	(0.007)	(0.007)	(0.008)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	246,890	239,550	224,847
Adjusted R^2	0.270	0.277	0.270
Residual Std. Error	0.694 (df = 238492)	0.700 (df = 231152)	0.695 (df = 216449)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 17:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.041***	−0.018	−0.078***
	(0.013)	(0.017)	(0.030)
PCGDP	0.001	−0.142**	
	(0.007)	(0.061)	
delta PCGDP	0.025	0.226	
	(0.101)	(0.152)	
Population growth	−0.022	−0.043	
	(0.039)	(0.066)	
pct employed in agriculture	−0.035	−0.070	
	(0.029)	(0.073)	
chng in ag employment	0.227**	0.157	
	(0.110)	(0.193)	
forest	0.003*	0.004	0.014
	(0.002)	(0.008)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	29,204	29,204	37,913
Adjusted R^2	0.070	0.308	0.203
Residual Std. Error	0.802 (df = 29167)	0.692 (df = 22344)	0.839 (df = 29683)

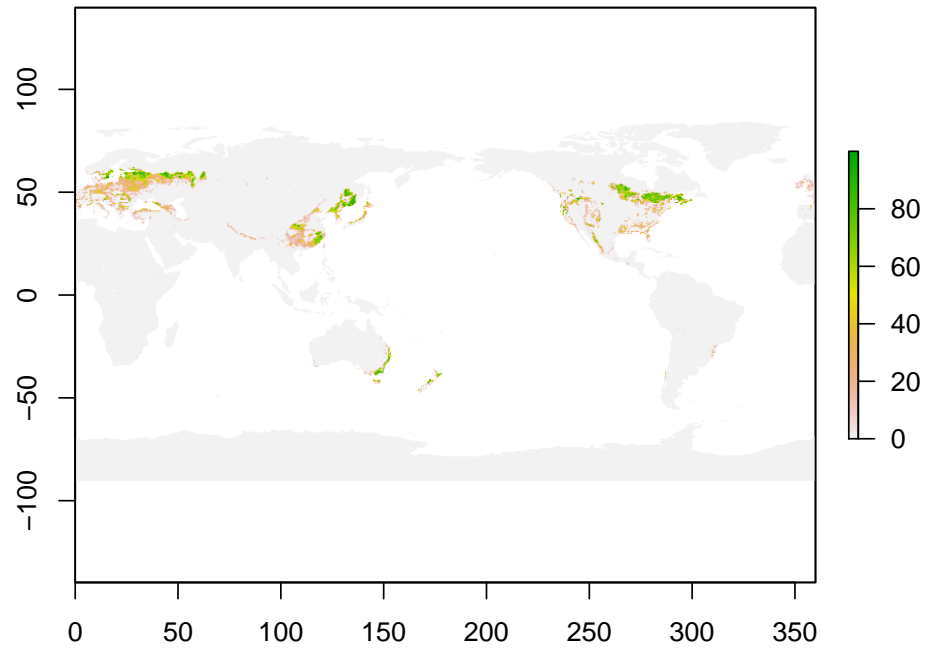*Note:* *p<0.1; **p<0.05; ***p<0.01

5.2 Temperate

Figure 5: Distribution of temperate forest in 1970

Table 18:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
democracy	−0.051	−0.101*	−0.174*
	(0.032)	(0.058)	(0.095)
PCGDP	−0.001	−0.011***	
	(0.001)	(0.004)	
delta PCGDP	−0.043**	−0.048**	
	(0.022)	(0.020)	
Population growth	0.010	−0.009	
	(0.013)	(0.016)	
pct employed in agriculture	−0.036***	−0.039**	
	(0.008)	(0.018)	
chng in ag employment	0.062**	0.050	
	(0.029)	(0.031)	
forest	−0.0005	0.011	0.005
	(0.0005)	(0.008)	(0.005)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	94,374	94,374	186,040
Adjusted R^2	0.061	0.293	0.285
Residual Std. Error	0.348 (df = 94333)	0.302 (df = 89362)	0.294 (df = 180385)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 19:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	−0.008	−0.022	−0.011
	(0.017)	(0.020)	(0.010)
PCGDP	−0.003***	−0.015***	
	(0.001)	(0.005)	
delta PCGDP	−0.007	−0.012	
	(0.031)	(0.024)	
Population growth	0.014	−0.012	
	(0.014)	(0.017)	
pct employed in agriculture	−0.039***	−0.033*	
	(0.007)	(0.019)	
chng in ag employment	0.057*	0.041	
	(0.029)	(0.028)	
forest	−0.0003	0.010	0.006
	(0.001)	(0.007)	(0.006)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	96,536	96,536	202,055
Adjusted R^2	0.054	0.263	0.235
Residual Std. Error	0.375 (df = 96495)	0.331 (df = 91399)	0.323 (df = 196246)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 20:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.022		
	(0.020)		
contested election		−0.037	
		(0.024)	
close election			−0.053
			(0.036)
PCGDP	−0.015***	−0.015***	−0.015***
	(0.005)	(0.005)	(0.005)
delta PCGDP	−0.012	−0.014	−0.013
	(0.024)	(0.024)	(0.025)
Population growth	−0.012	−0.011	−0.017
	(0.017)	(0.018)	(0.019)
pct employed in agriculture	−0.033*	−0.032	−0.029
	(0.019)	(0.020)	(0.020)
chng in ag employment	0.041	0.034	0.051*
	(0.028)	(0.028)	(0.031)
forest	0.010	0.012	0.011
	(0.007)	(0.009)	(0.008)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	96,536	93,809	89,132
Adjusted R^2	0.263	0.264	0.271
Residual Std. Error	0.331 (df = 91399)	0.335 (df = 88672)	0.334 (df = 83995)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 21:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.028***	−0.022*	−0.053***
	(0.010)	(0.012)	(0.015)
PCGDP	−0.001	−0.016**	
	(0.002)	(0.008)	
delta PCGDP	0.083	0.067	
	(0.069)	(0.075)	
Population growth	0.026	−0.069	
	(0.022)	(0.071)	
pct employed in agriculture	0.033	0.052	
	(0.023)	(0.073)	
chng in ag employment	−0.136	−0.162	
	(0.133)	(0.143)	
forest	0.001	−0.014	0.016
	(0.001)	(0.014)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	15,363	15,363	36,922
Adjusted R^2	0.116	0.267	0.254
Residual Std. Error	0.449 (df = 15326)	0.409 (df = 11285)	0.387 (df = 32192)

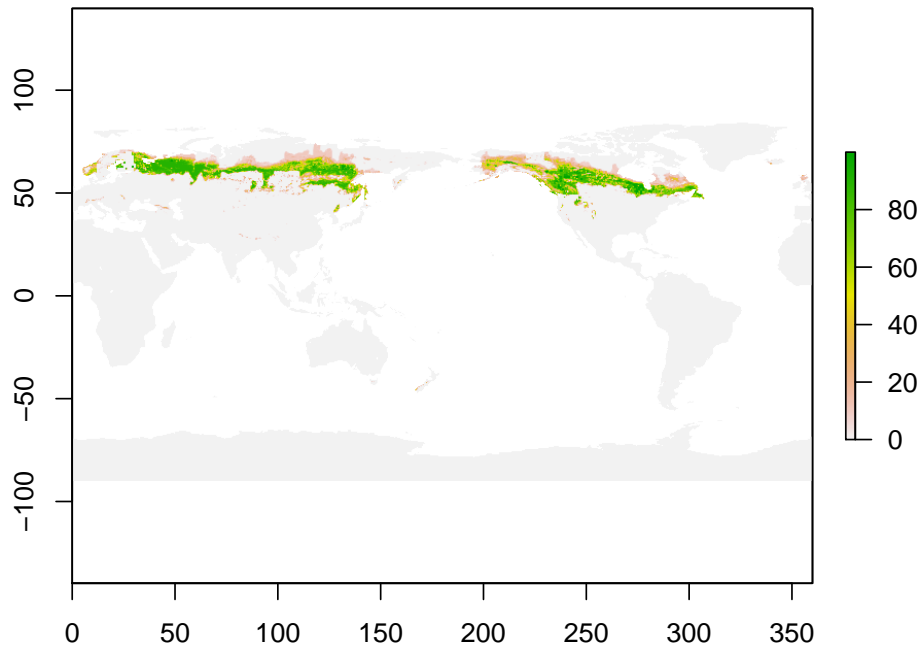*Note:* *p<0.1; **p<0.05; ***p<0.01

5.3 Boreal

Figure 6: Distribution of boreal forest in 1970

Table 22:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
democracy	−0.029	−0.046***	−0.013
	(0.028)	(0.017)	(0.065)
PCGDP	−0.001**	−0.001	
	(0.001)	(0.001)	
delta PCGDP	0.009	−0.009	
	(0.013)	(0.009)	
Population growth	0.068***	−0.007	
	(0.022)	(0.021)	
pct employed in agriculture	−0.054***	−0.072**	
	(0.020)	(0.031)	
chng in ag employment	0.073***	0.050***	
	(0.022)	(0.012)	
forest	−0.0004**	−0.002	−0.028*
	(0.0002)	(0.007)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	100,095	100,095	346,775
Adjusted R^2	0.253	0.596	0.405
Residual Std. Error	0.115 (df = 100054)	0.085 (df = 93382)	0.165 (df = 336814)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 23:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	0.008	0.0001	0.004
	(0.007)	(0.002)	(0.005)
PCGDP	−0.002**	−0.002	
	(0.001)	(0.001)	
delta PCGDP	0.017	0.001	
	(0.017)	(0.010)	
Population growth	0.065***	−0.010	
	(0.021)	(0.015)	
pct employed in agriculture	−0.052**	−0.067**	
	(0.021)	(0.029)	
chng in ag employment	0.085***	0.060***	
	(0.021)	(0.012)	
forest	−0.0005***	−0.003	−0.028*
	(0.0002)	(0.008)	(0.016)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	100,204	100,204	347,725
Adjusted R^2	0.251	0.593	0.405
Residual Std. Error	0.115 (df = 100163)	0.085 (df = 93491)	0.165 (df = 337754)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 24:

	(1)	(2)	(3)
		Dependent variable:	
		Forest Cover Change	
election year	0.0001		
	(0.002)		
contested election		−0.004	
		(0.003)	
close election			−0.008
			(0.006)
PCGDP	−0.002	−0.002	−0.002
	(0.001)	(0.001)	(0.001)
delta PCGDP	0.001	−0.0003	−0.002
	(0.010)	(0.009)	(0.010)
Population growth	−0.010	−0.010	−0.013
	(0.015)	(0.015)	(0.014)
pct employed in agriculture	−0.067**	−0.065**	−0.068**
	(0.029)	(0.029)	(0.029)
chng in ag employment	0.060***	0.052***	0.051***
	(0.012)	(0.014)	(0.011)
forest	−0.003	−0.002	−0.001
	(0.008)	(0.007)	(0.007)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	100,204	98,146	91,925
Adjusted R^2	0.593	0.588	0.587
Residual Std. Error	0.085 (df = 93491)	0.085 (df = 91433)	0.086 (df = 85212)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 25:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.008*	−0.020***	−0.025**
	(0.004)	(0.007)	(0.012)
PCGDP	−0.001	−0.001	
	(0.001)	(0.002)	
delta PCGDP	0.014	0.005	
	(0.015)	(0.012)	
Population growth	0.035**	−0.035	
	(0.017)	(0.030)	
pct employed in agriculture	−0.005	−0.048***	
	(0.010)	(0.014)	
chng in ag employment	0.118***	0.147***	
	(0.032)	(0.019)	
forest	−0.0004	−0.027*	−0.011
	(0.0003)	(0.014)	(0.011)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	21,301	21,301	58,023
Adjusted R^2	0.362	0.638	0.413
Residual Std. Error	0.092 (df = 21266)	0.069 (df = 14653)	0.135 (df = 48115)

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

6 Types of government

This section uses polity scores to divide governments into democracies (Polity IV score of 5 or greater), anocracies (Polity IV score of -4 to 4), and autocracies (Polity IV score of -10 to -5). Note that this obscures years in which countries transition from one government type to another, a process that seems to be important for changes in forest use. While coefficients lose their significance in many cases because of the smaller effective sample size, the size and direction of point estimates is consistent for democracies and anocracies, but not for autocracies (where we wouldn't expect elections to matter for determining if a leader stays in power).

6.1 Democracy

Table 26:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	0.005	−0.001	−0.002
	(0.024)	(0.012)	(0.012)
PCGDP	0.004	0.003	
	(0.003)	(0.002)	
delta PCGDP	0.007	0.010	
	(0.032)	(0.025)	
Population growth	−0.065	−0.010	
	(0.050)	(0.037)	
pct employed in agriculture	0.041	0.046	
	(0.079)	(0.043)	
chng in ag employment	−0.090	−0.085	
	(0.108)	(0.080)	
forest	0.002	0.041***	0.039***
	(0.001)	(0.008)	(0.008)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	171,679	171,679	343,362
Adjusted R^2	0.040	0.467	0.452
Residual Std. Error	0.748 (df = 171641)	0.558 (df = 157179)	0.452 (df = 324220)

Note:	*p<0.1; **p<0.05; ***p<0.01

Table 27:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.001		
	(0.012)		
contested election		−0.012	
		(0.016)	
close election			−0.030
			(0.020)
PCGDP	0.003	0.003	0.003
	(0.002)	(0.002)	(0.002)
delta PCGDP	0.010	0.007	0.005
	(0.025)	(0.025)	(0.029)
Population growth	−0.010	−0.010	−0.022
	(0.037)	(0.034)	(0.031)
pct employed in agriculture	0.046	0.034	0.034
	(0.043)	(0.039)	(0.043)
chng in ag employment	−0.085	−0.077	−0.080
	(0.080)	(0.079)	(0.080)
forest	0.041***	0.040***	0.041***
	(0.008)	(0.007)	(0.008)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	171,679	175,390	162,069
Adjusted R^2	0.467	0.467	0.459
Residual Std. Error	0.558 (df = 157179)	0.554 (df = 160815)	0.561 (df = 147513)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 28:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.034***	−0.014	−0.015*
	(0.011)	(0.009)	(0.009)
PCGDP	0.005*	0.0004	
	(0.003)	(0.004)	
delta PCGDP	−0.022	−0.017	
	(0.052)	(0.042)	
Population growth	−0.013	−0.013	
	(0.039)	(0.093)	
pct employed in agriculture	0.035	0.013	
	(0.056)	(0.073)	
chng in ag employment	0.245	0.240	
	(0.222)	(0.210)	
forest	0.002	0.019***	0.033**
	(0.002)	(0.006)	(0.015)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	34,883	34,883	88,276
Adjusted R^2	0.084	0.529	0.473
Residual Std. Error	0.646 (df = 34847)	0.464 (df = 20929)	0.429 (df = 69720)

Note: *p<0.1; **p<0.05; ***p<0.01

6.2 Anocracy

Table 29:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.0003	0.016	0.022*
	(0.014)	(0.022)	(0.013)
PCGDP	−0.048***	−0.098**	
	(0.013)	(0.045)	
delta PCGDP	−0.075	−0.032	
	(0.073)	(0.090)	
Population growth	−0.038**	−0.045	
	(0.016)	(0.056)	
pct employed in agriculture	−0.061**	−0.167	
	(0.026)	(0.103)	
chng in ag employment	0.044	0.036	
	(0.051)	(0.061)	
forest	0.002**	−0.001	−0.014*
	(0.001)	(0.009)	(0.007)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	136,778	136,778	150,701
Adjusted R^2	0.084	0.193	0.143
Residual Std. Error	0.613 (df = 136740)	0.575 (df = 123328)	0.600 (df = 136770)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 30:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	0.016		
	(0.022)		
contested election		0.011	
		(0.045)	
close election			−0.038
			(0.034)
PCGDP	−0.098**	−0.099**	−0.097**
	(0.045)	(0.041)	(0.041)
delta PCGDP	−0.032	−0.022	0.005
	(0.090)	(0.081)	(0.076)
Population growth	−0.045	−0.071	−0.061
	(0.056)	(0.050)	(0.048)
pct employed in agriculture	−0.167	−0.098	−0.101
	(0.103)	(0.066)	(0.065)
chng in ag employment	0.036	0.033	0.042
	(0.061)	(0.028)	(0.027)
forest	−0.001	0.002	−0.001
	(0.009)	(0.010)	(0.006)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	136,778	142,305	131,966
Adjusted R^2	0.193	0.197	0.190
Residual Std. Error	0.575 (df = 123328)	0.564 (df = 128040)	0.547 (df = 117701)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 31:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
electoral closeness	0.019	−0.029	−0.108*
	(0.015)	(0.037)	(0.059)
PCGDP	−0.068***	−0.088	
	(0.024)	(0.088)	
delta PCGDP	0.042	0.165	
	(0.142)	(0.117)	
Population growth	−0.081*	−0.170	
	(0.045)	(0.280)	
pct employed in agriculture	−0.030	−0.081	
	(0.048)	(0.188)	
chng in ag employment	−0.183	−0.289	
	(0.143)	(0.301)	
forest	0.001	−0.003	−0.009
	(0.001)	(0.027)	(0.023)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	25,181	25,181	28,438
Adjusted R^2	0.138	−0.029	0.011
Residual Std. Error	0.528 (df = 25144)	0.577 (df = 13377)	0.539 (df = 16318)

Note: *p<0.1; **p<0.05; ***p<0.01

6.3 Autocracy

Table 32:

| | Dependent variable: | | |
| | Forest Cover Change | | |
	(1)	(2)	(3)
election year	0.053	0.040	0.028
	(0.040)	(0.076)	(0.062)
PCGDP	0.013	−0.041	
	(0.009)	(0.054)	
delta PCGDP	−0.023	0.084***	
	(0.028)	(0.020)	
Population growth	−0.006	−0.004	
	(0.018)	(0.018)	
pct employed in agriculture	−0.024	−0.096	
	(0.017)	(0.068)	
chng in ag employment	0.079*	0.089	
	(0.042)	(0.057)	
forest	0.0001	0.027	0.077**
	(0.001)	(0.017)	(0.037)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	63,267	63,267	105,341
Adjusted R^2	0.022	0.333	0.310
Residual Std. Error	0.563 (df = 63229)	0.465 (df = 58120)	0.577 (df = 98768)

Note:	*p<0.1; **p<0.05; ***p<0.01

Table 33:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	0.040		
	(0.076)		
contested election		0.033	
		(0.026)	
close election			0.014
			(0.016)
PCGDP	−0.041	−0.047	−0.048
	(0.054)	(0.044)	(0.045)
delta PCGDP	0.084***	0.079***	0.081***
	(0.020)	(0.023)	(0.024)
Population growth	−0.004	−0.018	−0.020
	(0.018)	(0.018)	(0.018)
pct employed in agriculture	−0.096	−0.070**	−0.070**
	(0.068)	(0.032)	(0.032)
chng in ag employment	0.089	0.079*	0.081*
	(0.057)	(0.048)	(0.049)
forest	0.027	0.028	0.028*
	(0.017)	(0.018)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	63,267	87,831	87,169
Adjusted R^2	0.333	0.348	0.347
Residual Std. Error	0.465 (df = 58120)	0.404 (df = 80014)	0.405 (df = 79352)

Note: 				*p<0.1; **p<0.05; ***p<0.01

Table 34:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	0.029**	−0.001	0.057
	(0.012)	(0.013)	(0.061)
PCGDP	−0.077*	−0.148**	
	(0.044)	(0.073)	
delta PCGDP	0.215	0.657*	
	(0.197)	(0.381)	
Population growth	0.071	0.035*	
	(0.055)	(0.020)	
pct employed in agriculture	−0.053	0.091***	
	(0.033)	(0.032)	
chng in ag employment	0.220***	0.126	
	(0.045)	(0.210)	
forest	0.002	0.105**	0.210***
	(0.001)	(0.048)	(0.074)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	2,856	2,856	8,565
Adjusted R^2	0.266	0.543	0.726
Residual Std. Error	0.359 (df = 2826)	0.283 (df = 1348)	0.331 (df = 5358)

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

7 Delete 0 forest cells once they become 0

In the main paper specifications I interact all independent variables with an indicator that is 1 if there is forest remaining in a cell and 0 otherwise. This is one way to solve a structural zeroes problem where cells that are reduced to 0 forest necessarily have 0 forest cover change (primary forest cover does not increase in 99.9% of cells). This keeps the panel balanced, but artifically inflates the number of observations in later years. The specification below deletes cells that have 0 forest cover in the year after they are reduced to 0. The democracy vs non-democracy result loses much of its magnitude and is no longer significant–either because democracies cut down much of their forest over the time period considered here, or because the result is driven by the interaction of forest cover and the democracy variable. The comparisions of election years to non-election years still shows a similar relationship, where election years have higher rates of forest cover than non-election years, but variation on the margin of victory is also no longer statistically significant.

Table 35:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
democracy	−0.100*	−0.014	0.035
	(0.060)	(0.042)	(0.045)
PCGDP	0.00000*	0.00000	
	(0.00000)	(0.00000)	
delta PCGDP	−0.00004	0.00002	
	(0.00003)	(0.00002)	
Population growth	−0.031	−0.008	
	(0.027)	(0.016)	
pct employed in agriculture	0.002	−0.004**	
	(0.003)	(0.002)	
chng in ag employment	0.001	0.001	
	(0.002)	(0.001)	
forest	0.002**	0.053***	0.063***
	(0.001)	(0.009)	(0.016)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	376,105	376,105	757,053
Adjusted R^2	0.028	0.370	0.291
Residual Std. Error	0.678 (df = 376064)	0.546 (df = 357904)	0.559 (df = 733310)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 36:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.024*	−0.020**	−0.010
	(0.014)	(0.008)	(0.014)
PCGDP	0.00000	0.00000	
	(0.00000)	(0.00000)	
delta PCGDP	−0.00001	0.00003	
	(0.00002)	(0.00002)	
Population growth	−0.033	−0.009	
	(0.030)	(0.016)	
pct employed in agriculture	0.002	−0.004**	
	(0.004)	(0.002)	
chng in ag employment	0.0004	0.001	
	(0.003)	(0.001)	
forest	0.002**	0.053***	0.062***
	(0.001)	(0.009)	(0.015)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	378,425	378,425	777,819
Adjusted R^2	0.024	0.368	0.288
Residual Std. Error	0.681 (df = 378384)	0.548 (df = 360114)	0.557 (df = 753832)

Note: *p<0.1; **p<0.05; ***p<0.01

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Table 37:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	−0.020**		
	(0.008)		
contested election		−0.022**	
		(0.009)	
close election			−0.037**
			(0.016)
PCGDP	0.00000	0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)
delta PCGDP	0.00003	0.00003	0.00002
	(0.00002)	(0.00002)	(0.00002)
Population growth	−0.009	−0.010	−0.014
	(0.016)	(0.015)	(0.015)
pct employed in agriculture	−0.004**	−0.004**	−0.004**
	(0.002)	(0.002)	(0.002)
chng in ag employment	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)
forest	0.053***	0.053***	0.054***
	(0.009)	(0.009)	(0.009)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	378,425	375,034	350,665
Adjusted R^2	0.368	0.368	0.367
Residual Std. Error	0.548 (df = 360114)	0.550 (df = 356723)	0.545 (df = 332359)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 38:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.007	−0.007	−0.0005
	(0.007)	(0.008)	(0.001)
PCGDP	−0.00000	−0.00000	
	(0.00000)	(0.00000)	
delta PCGDP	0.00001	0.00001	
	(0.00004)	(0.00004)	
Population growth	0.011	0.011	
	(0.033)	(0.044)	
pct employed in agriculture	−0.003	−0.003	
	(0.005)	(0.007)	
chng in ag employment	−0.001	−0.001	
	(0.006)	(0.004)	
forest	0.036***	0.036***	0.051***
	(0.013)	(0.010)	(0.018)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	54,682	54,682	115,106
Adjusted R^2	0.438	0.438	0.387
Residual Std. Error	0.499 (df = 39291)	0.499 (df = 39291)	0.479 (df = 94210)

Note: *p<0.1; **p<0.05; ***p<0.01

8 Number of elections after transition to democracy
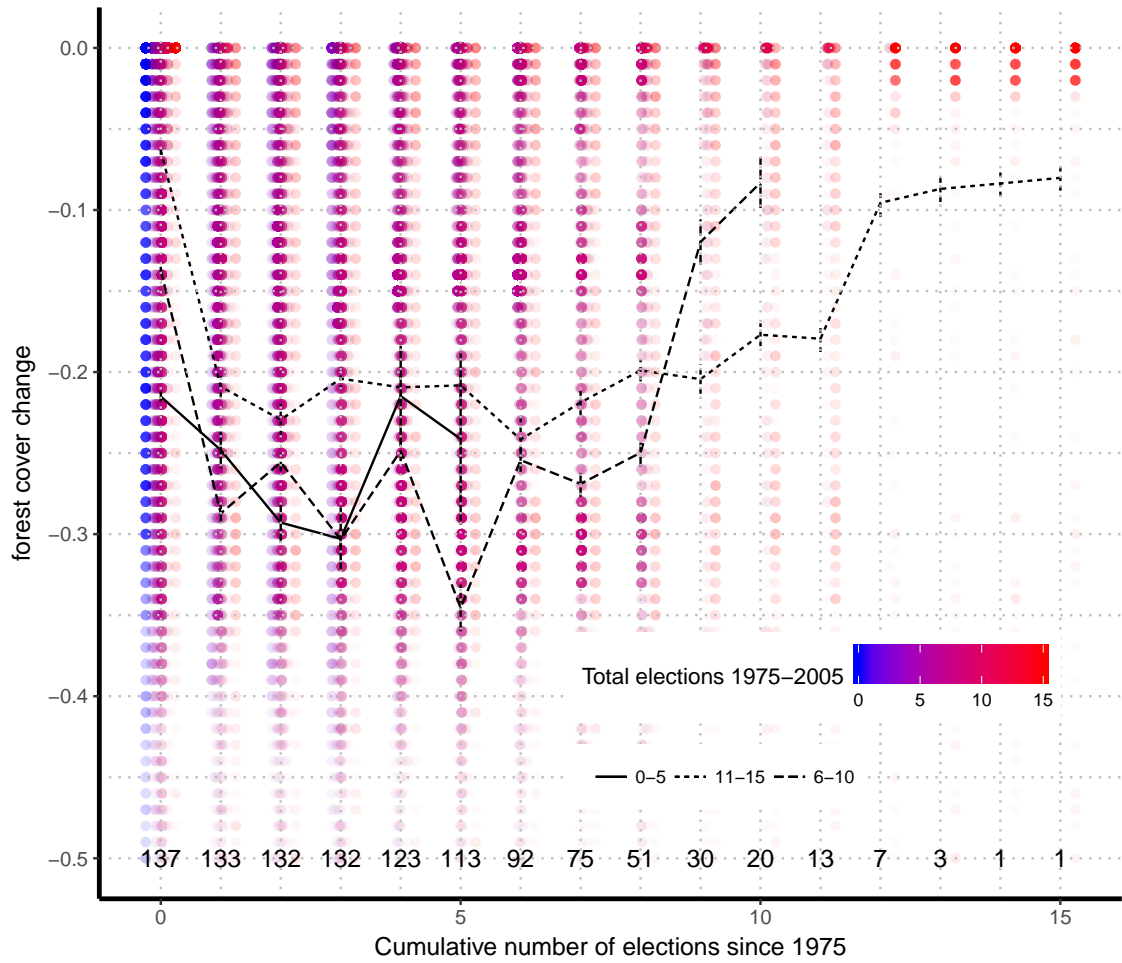
Figure 7: Average forest loss by number of elections experienced by a country

This section considers whether the first few elections that a country experiences have higher rates of deforestation than later elections. Figure 7 plots the cumulative number of elections experienced by a point since 1975 on the x-axis, and the percentage point forest cover change on the y-axis. The color of the points represents the total number of elections that point will experience over the time period, where points that experience many total elections are red, and points that experience few total elections are blue. The solid line represents all of the points that only have 0-5 elections over the whole time period, the dashed line is the countries with six to ten elections, and the dotted line is countries with more than ten elections. The numbers at the bottom of the figure above the x-axis are the number of countries represented in each column. This figure shows that as countries experience their first election their rate of fores cover loss increases, even among countries that will experience very many elections. During the first few elections, forest cover change is more negative than the global average of -0.24 percentage points per year. Then, as a country experiences more election, the rate of forest cover change begins to approach zero.

This provides some evidence that the first few elections experienced by a country have higher rates of forest loss than either the period before the election occured or in later elections.

9 Before/during/after election by election date

This section attempts to use variation in the timing of elections to further test when deforestation occurs with respect to an election. Data are aggregated to a country-year scale as before. Figure 8 shows the distribution of election months in the sample. Figure 9 shows the distribution of forest cover change in the same year as the election occured. If deforestation rates were centered in the months around an election, we might expect the annual deforestation rate to be higher for elections that happen in the middle of the year and lower for elections that happen at the beginning or end of the year. This is because the deforestation period for early or late elections would overlap with the previous or next year respectively. Figures 10 and 11 show deforestation rates in the previous and following year respectively.

None of the loess fits have a distinguishable slope or curvature. This does not provide evidence for the hypothesis that deforestation happens in the months surrounding an election. Pailler (2018) provides some explanation for why this might be the case. She finds that deforestation is strongly seasonal in Brazil, with virtually all deforestation occuring in the dry season. This means that the month to month timing of an election would not affect deforestation rates on a sub-annual scale. Rather, deforestation rates might be elevated in the year before and/or after the election, as shown in the main results.
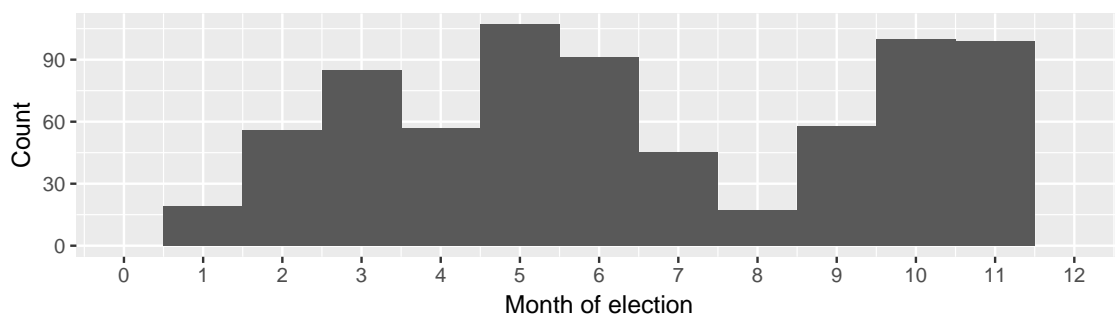

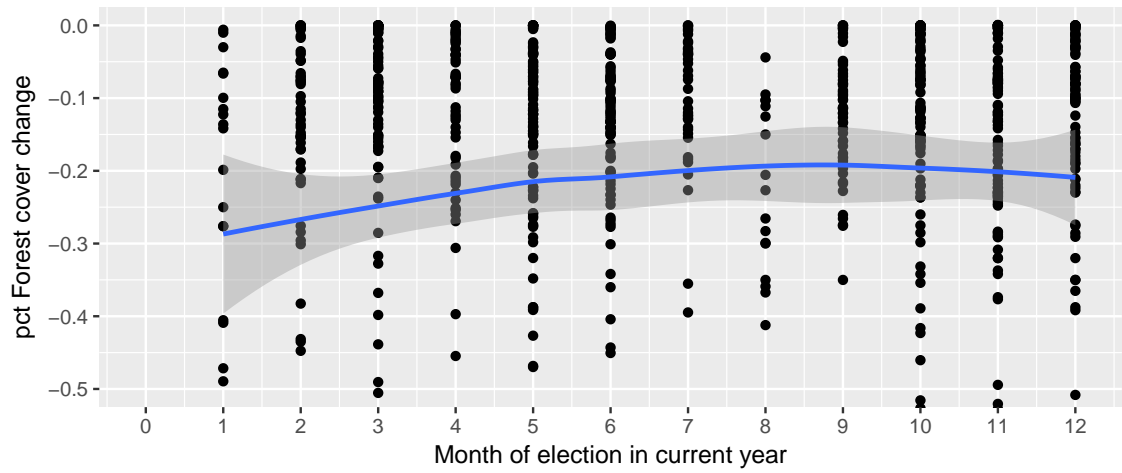Figure 8: Distribubtion of election months

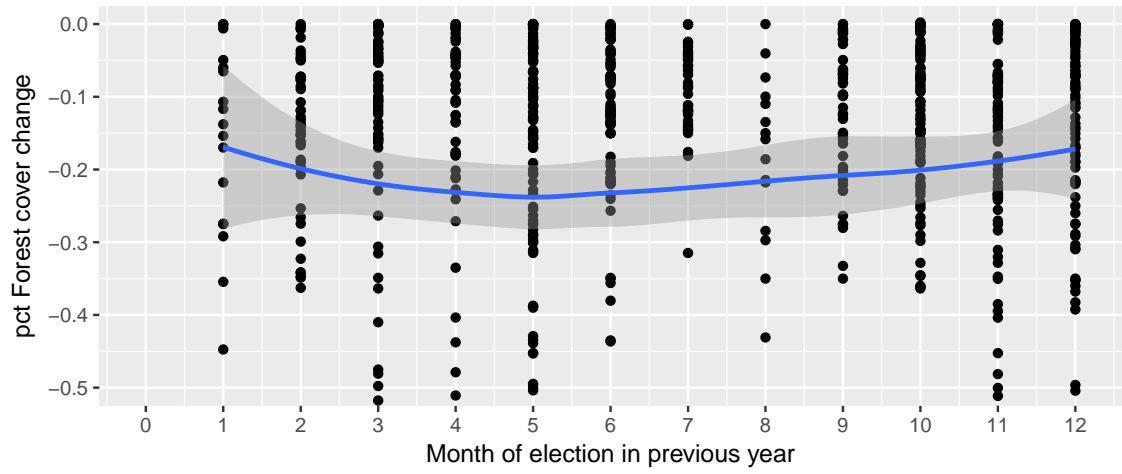Figure 9: Average forest loss in year t by month of election in year t

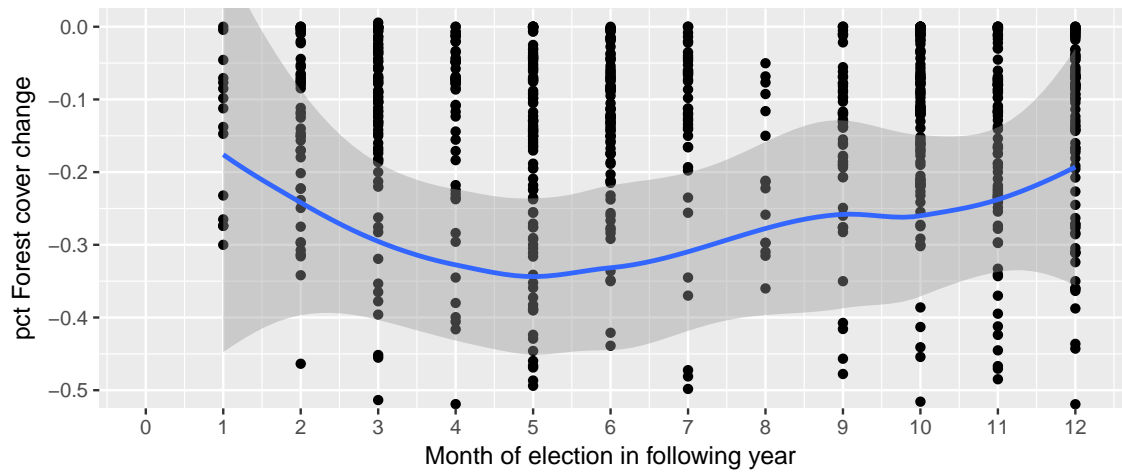Figure 10: Average forest loss in year t-1 by month of election in year t

Figure 11: Average forest loss in year t+1 by month of election in year t

10 Weighted by inverse country area

This section addresses the possibility that the results are driven by a few large countries with many forested cells–certainly a possibility where the unit of observation is a piece of land rather than a country. The following tables present the results of the paper regressions, but where each observation is weighted by the inverse of the number of forested cells in its country in that year. The results are consistent with the paper regressions, except that election years are no longer significantly different from non-election years. Contested and close elections have the same sign as the original results. However, within election years, the margin of victory maintains roughly the same magnitude and is highly significant.

Table 39:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
democracy	−0.116***	−0.148***	−0.248***
	(0.043)	(0.052)	(0.048)
PCGDP	−0.002	−0.005	
	(0.002)	(0.004)	
delta PCGDP	0.007	−0.036	
	(0.029)	(0.025)	
Population growth	−0.035***	−0.033**	
	(0.013)	(0.017)	
pct employed in agriculture	−0.036***	−0.073***	
	(0.011)	(0.020)	
chng in ag employment	0.060***	0.049***	
	(0.017)	(0.018)	
forest	0.0005	0.017	0.024
	(0.0004)	(0.012)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	423,172	423,172	816,361
Adjusted R^2	0.037	0.155	0.108
Residual Std. Error	0.064 (df = 423131)	0.060 (df = 403926)	0.066 (df = 792599)

Note:	*p<0.1; **p<0.05; ***p<0.01

Table 40:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	0.007	0.010	0.030*
	(0.018)	(0.017)	(0.018)
PCGDP	−0.004***	−0.005	
	(0.001)	(0.005)	
delta PCGDP	0.001	−0.005	
	(0.015)	(0.007)	
Population growth	−0.034***	−0.039**	
	(0.013)	(0.017)	
pct employed in agriculture	−0.039***	−0.080***	
	(0.011)	(0.021)	
chng in ag employment	0.067***	0.055***	
	(0.016)	(0.019)	
forest	0.0001	0.018	0.023
	(0.0004)	(0.013)	(0.017)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	425,965	425,965	838,285
Adjusted R^2	0.032	0.148	0.101
Residual Std. Error	0.065 (df = 425924)	0.061 (df = 406591)	0.066 (df = 814298)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 41:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	0.010		
	(0.017)		
contested election		−0.009	
		(0.022)	
close election			−0.045
			(0.039)
PCGDP	−0.005	−0.004	−0.005
	(0.005)	(0.005)	(0.005)
delta PCGDP	−0.005	−0.005	−0.008
	(0.007)	(0.006)	(0.006)
Population growth	−0.039**	−0.039**	−0.042**
	(0.017)	(0.017)	(0.017)
pct employed in agriculture	−0.080***	−0.081***	−0.081***
	(0.021)	(0.022)	(0.022)
chng in ag employment	0.055***	0.053***	0.050**
	(0.019)	(0.019)	(0.020)
forest	0.018	0.021	0.021
	(0.013)	(0.014)	(0.014)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	425,965	414,244	389,875
Adjusted R^2	0.148	0.151	0.148
Residual Std. Error	0.061 (df = 406591)	0.061 (df = 394870)	0.062 (df = 370501)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 42:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
electoral closeness	−0.021***	−0.027***	−0.033***
	(0.006)	(0.008)	(0.006)
PCGDP	−0.002	−0.011**	
	(0.002)	(0.004)	
delta PCGDP	0.058	0.043	
	(0.051)	(0.052)	
Population growth	−0.020	−0.007	
	(0.014)	(0.027)	
pct employed in agriculture	−0.020	−0.024	
	(0.013)	(0.035)	
chng in ag employment	0.059	0.105	
	(0.065)	(0.094)	
forest	0.001*	0.001	0.006
	(0.0005)	(0.005)	(0.007)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	63,012	63,012	126,571
Adjusted R^2	0.070	0.172	0.180
Residual Std. Error	0.049 (df = 62975)	0.046 (df = 46146)	0.041 (df = 104641)

Note: *p<0.1; **p<0.05; ***p<0.01

11 Aggregated by country

An alternative approach is to aggregate the results by country. Doing so loses much of the variation at the cell level that can be explained by cell fixed effects or lagged forest cover, but prevents large countries from having an outsized impact on the results. The below tables present the results of this aggregation. Notably, margin of victory is still significant at $\alpha = 0.05$ confidence.

Table 43:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
democracy	−0.067	−0.051	−0.086
	(0.051)	(0.082)	(0.053)
PCGDP	−0.001	0.004	
	(0.002)	(0.007)	
delta PCGDP	−0.007	−0.046*	
	(0.033)	(0.027)	
Population growth	−0.018	−0.007	
	(0.014)	(0.017)	
pct employed in agriculture	−0.021*	−0.064**	
	(0.012)	(0.026)	
chng in ag employment	0.050***	0.039**	
	(0.015)	(0.019)	
forest	−0.001	0.039	0.038
	(0.001)	(0.029)	(0.028)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	3,030	3,030	4,442
Adjusted R^2	0.030	0.129	0.107
Residual Std. Error	0.471 (df = 2989)	0.446 (df = 2860)	0.545 (df = 4266)

Note:	*p<0.1; **p<0.05; ***p<0.01

Table 44:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
election year	0.009	0.010	0.031
	(0.023)	(0.020)	(0.021)
PCGDP	−0.002	0.009	
	(0.001)	(0.010)	
delta PCGDP	−0.002	−0.010	
	(0.015)	(0.008)	
Population growth	−0.013	−0.010	
	(0.013)	(0.017)	
pct employed in agriculture	−0.019	−0.066**	
	(0.012)	(0.027)	
chng in ag employment	0.052***	0.042**	
	(0.015)	(0.019)	
forest	−0.001	0.040	0.038
	(0.001)	(0.029)	(0.026)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	3,111	3,111	5,180
Adjusted R^2	0.026	0.124	0.107
Residual Std. Error	0.467 (df = 3070)	0.443 (df = 2939)	0.508 (df = 4996)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 45:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
election year	0.010		
	(0.020)		
contested election		0.030	
		(0.043)	
close election			−0.089
			(0.114)
PCGDP	0.009	0.010	0.010
	(0.010)	(0.010)	(0.010)
delta PCGDP	−0.010	−0.015**	−0.014*
	(0.008)	(0.007)	(0.008)
Population growth	−0.010	−0.010	−0.014
	(0.017)	(0.018)	(0.019)
pct employed in agriculture	−0.066**	−0.070**	−0.069**
	(0.027)	(0.028)	(0.028)
chng in ag employment	0.042**	0.031	0.029
	(0.019)	(0.019)	(0.019)
forest	0.040	0.043	0.044
	(0.029)	(0.031)	(0.031)
Year FE?	Yes	Yes	Yes
Unit FE	Yes	Yes	Yes
Observations	3,111	2,768	2,719
Adjusted R^2	0.124	0.119	0.120
Residual Std. Error	0.443 (df = 2939)	0.461 (df = 2596)	0.464 (df = 2547)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 46:

	(1)	(2)	(3)
	Dependent variable:		
	Forest Cover Change		
electoral closeness	−0.019**	−0.019**	−0.017***
	(0.010)	(0.010)	(0.006)
PCGDP	−0.009	−0.009	
	(0.008)	(0.008)	
delta PCGDP	0.020	0.020	
	(0.056)	(0.056)	
Population growth	0.026	0.026	
	(0.029)	(0.029)	
pct employed in agriculture	−0.015	−0.015	
	(0.049)	(0.049)	
chng in ag employment	0.148	0.148	
	(0.099)	(0.099)	
forest	−0.002	−0.002	0.007
	(0.015)	(0.015)	(0.013)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	411	411	605
Adjusted R^2	0.255	0.255	0.217
Residual Std. Error	0.256 (df = 260)	0.256 (df = 260)	0.268 (df = 443)

Note:	*p<0.1; **p<0.05; ***p<0.01

12 Instrument for competitiveness with previous election competitiveness

A final specification acknowledges that if the theory presented in the paper is correct, the results of an election are in part influenced by the forest cover loss in that year, resulting in endogeneity bias. One way to resolve this issue is to instrument (figure 47) or proxy (figure 48) for the results of an election with the results of the previous election. Neither approach supports the results described in the paper. Two main explanations for this are that 1) previous election results are a weak instrument, and 2) if most deforestation happens in early elections, then an instrument can only capture the results of the second election onwards. In this case, rather than relying on an IV approach, it seems best to rely on the argument that the margin of victory is a function of a larger political strategy, of which allocating rights to forested land makes up a small part.

Table 47:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
PCGDP	0.003	0.027	
	(0.002)	(0.139)	
delta PCGDP	0.012	−0.052	
	(0.064)	(0.369)	
Population growth	0.019	−0.009	
	(0.049)	(0.197)	
pct employed in agriculture	−0.041	−0.374	
	(0.039)	(1.325)	
chng in ag employment	0.087	1.325	
	(0.115)	(5.176)	
forest	0.001*	0.049*	0.067**
	(0.001)	(0.026)	(0.027)
electoral closeness	−0.030	0.263	0.028
	(0.025)	(1.128)	(0.049)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	23,386	23,386	75,090
Adjusted R^2	0.053	0.073	0.344
Residual Std. Error	0.707 (df = 23352)	0.699 (df = 15602)	0.510 (df = 61827)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 48:

	Dependent variable:		
	Forest Cover Change		
	(1)	(2)	(3)
electoral closeness	−0.016	−0.013	0.008
	(0.013)	(0.015)	(0.013)
PCGDP	0.003	−0.008	
	(0.002)	(0.007)	
delta PCGDP	0.008	0.033	
	(0.061)	(0.065)	
Population growth	0.026	−0.004	
	(0.043)	(0.082)	
pct employed in agriculture	−0.033	−0.119	
	(0.037)	(0.162)	
chng in ag employment	0.121	0.081	
	(0.096)	(0.161)	
forest	0.001**	0.049*	0.067**
	(0.0004)	(0.029)	(0.027)
Year FE?	Yes	Yes	Yes
Unit FE	No	Yes	Yes
Observations	23,386	23,386	75,090
Adjusted R^2	0.055	0.339	0.348
Residual Std. Error	0.706 (df = 23352)	0.590 (df = 15602)	0.509 (df = 61827)

Note: *p<0.1; **p<0.05; ***p<0.01

References

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Pailler, Sharon. 2018. "Re-election incentives and deforestation cycles in the Brazilian Amazon." *Journal of Environmental Economics and Management* 88:345–365.