Replication Exercise
Cycles of Fire? Politics and Forest Burning in Indonesia

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1 Introduction

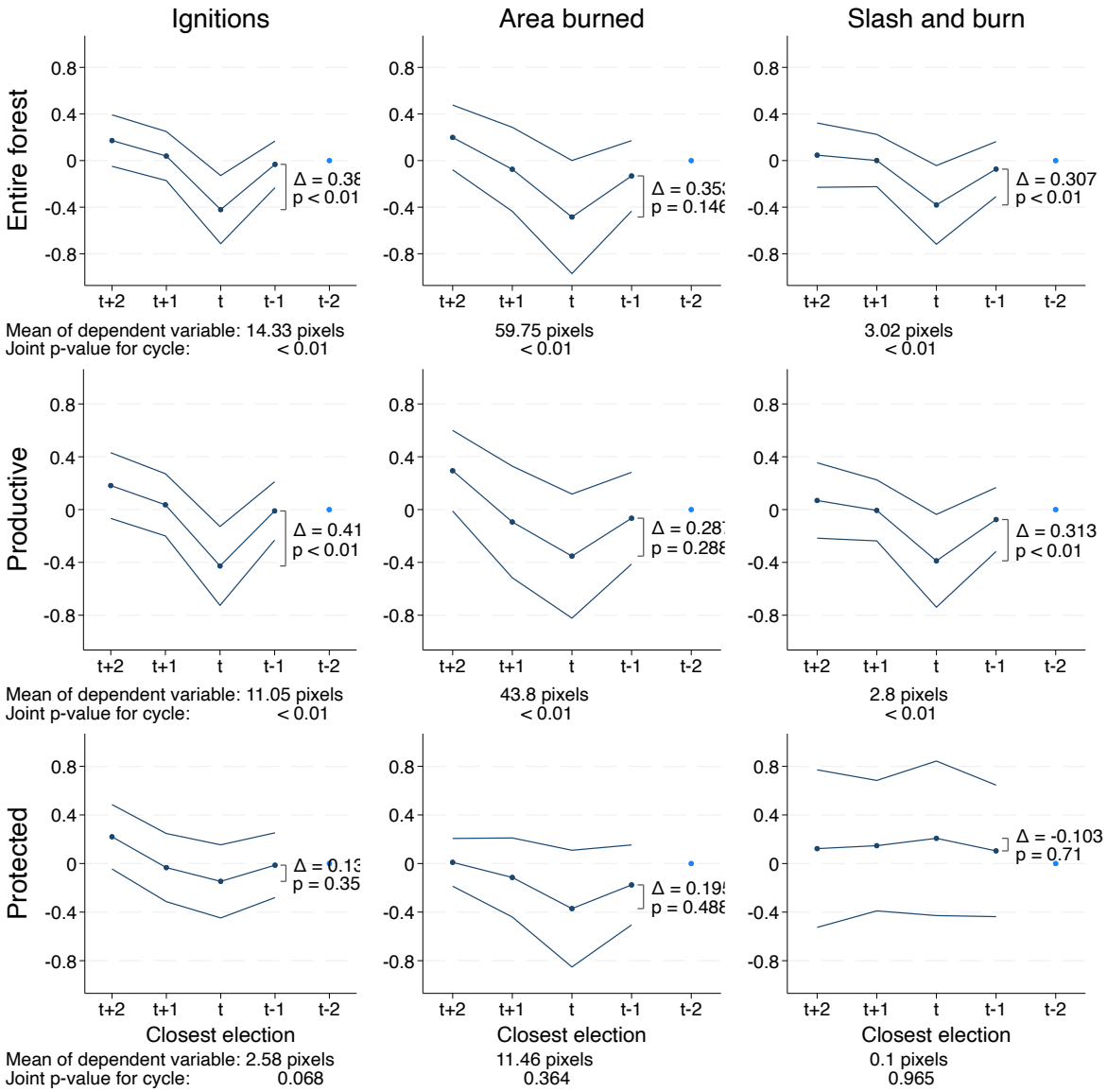
The goal of this exercise is to replicate the figures and tables for the paper "Cycles of Fire? Politics and Forest Burning in Indonesia" by Clare Balboni, Robin Burgess, Anton Heil, Jonathan Old and Benjamin A. Olken. This paper exploits quasi-random variation in the timing of Indonesian district (kabupaten) elections to identify electoral cycles in forest fire activity. Following post-Soeharto decentralization reforms, substantial authority over land management devolved to district heads (bupati), whose elections—phased based on pre-1998 term expirations—create staggered, plausibly exogenous variation in electoral timing.

Using satellite data on 107,000 fires from 2000–2016 and a Poisson event-study design, the authors show that both fire ignitions and burned area fall sharply in election years and spike immediately after. Specifically, ignitions rise by 56.8% and burned area by 65.9% in the year following elections, relative to the election year. These cycles are concentrated in "productive" forests (where land can be leased or converted for palm oil/logging), but absent in protected forests, consistent with political incentives to suppress illegal land clearing where regulatory discretion is highest and private rents largest. A third outcome — fires following deforestation ("slash-and-burn") shows similar dynamics, reinforcing that electoral suppression targets politically salient, human-driven activity. These findings contrast with standard political budget cycles where public spending rises pre-election and instead resemble cycles in enforcement of unpopular policies.

The results imply that environmental degradation in decentralized regimes may be driven less by weak capacity and more by strategic leniency timed around electoral incentives. The paper contributes to a broader literature on the political economy of environmental enforcement, suggesting that institutional designs reducing local discretion may be important for mitigating externally costly but privately profitable ecological damage.

Overall, all the figures and tables replicated without any errors.

2 Main Figure



B Full regression results by land types

Table B1: Electoral cycle by land types – Ignitions, District and Year FE

	(1) All Forest	(2) Concession	(3) Oil Palm	(4) Fibre	(5) Logging	(6) Unleased	(7) Protected
Election date:							
In 2 years	0.104	0.092	-0.088	0.168	0.221	0.097	0.138
	(0.086)	(0.107)	(0.112)	(0.143)	(0.190)	(0.098)	(0.107)
Next year	0.049	0.165	0.040	0.218	0.184	-0.049	-0.059
	(0.080)	(0.091)	(0.116)	(0.115)	(0.212)	(0.090)	(0.100)
This year	-0.418	-0.378	-0.515	-0.328	-0.043	-0.441	-0.158
	(0.120)	(0.145)	(0.194)	(0.172)	(0.255)	(0.115)	(0.119)
Last year	0.032	0.091	0.019	0.093	0.192	-0.049	0.078
	(0.083)	(0.107)	(0.152)	(0.110)	(0.163)	(0.076)	(0.115)
Observations	4218	4218	4218	4218	4218	4218	4218
Mean of DV	17.63	9.04	4.00	4.13	0.90	6.92	3.37
Spatial FE	District	District	District	District	District	District	District
Temporal FE	Year	Year	Year	Year	Year	Year	Year
Joint p-value	<0.01	<0.01	<0.01	<0.01	0.157	<0.01	0.149
This vs. last:							
Difference	0.450	0.469	0.534	0.420	0.235	0.392	0.236
p-value	<0.01	<0.01	<0.01	<0.01	0.138	<0.01	0.059

Note: Standard errors clustered at 2018 district level in parentheses.

Table B2: Electoral cycle by land types – Total area burned, District and Year FE

	(1) All Forest	(2) Concession	(3) Oil Palm	(4) Fibre	(5) Logging	(6) Unleased	(7) Protected
Election date:							
In 2 years	0.163	0.160	-0.020	0.256	0.282	0.257	-0.173
	(0.152)	(0.209)	(0.148)	(0.300)	(0.240)	(0.147)	(0.151)
Next year	-0.062	0.029	-0.116	0.037	0.180	-0.090	-0.226
	(0.143)	(0.199)	(0.212)	(0.237)	(0.245)	(0.143)	(0.144)
This year	-0.541	-0.513	-0.370	-0.741	-0.055	-0.455	-0.420
	(0.201)	(0.251)	(0.237)	(0.313)	(0.328)	(0.182)	(0.226)
Last year	-0.035	0.008	-0.014	-0.093	0.244	-0.075	-0.110
	(0.151)	(0.204)	(0.208)	(0.231)	(0.213)	(0.125)	(0.182)
Observations	4218	4218	4218	4218	4218	4218	4218
Mean of DV	75.61	41.14	18.08	20.14	2.92	27.12	14.39
Spatial FE	District	District	District	District	District	District	District
Temporal FE	Year	Year	Year	Year	Year	Year	Year
Joint p-value	<0.01	0.012	0.054	<0.01	0.063	<0.01	0.331
This vs. last:							
Difference	0.506	0.521	0.356	0.648	0.299	0.380	0.310
p-value	<0.01	0.021	0.114	0.031	0.098	0.042	0.213

Note: Standard errors clustered at 2018 district level in parentheses.

Table B3: Electoral cycle by land types – Slash and burn, District and Year FE

	(1) All Forest	(2) Concession	(3) Oil Palm	(4) Fibre	(5) Logging	(6) Unleased	(7) Protected
Election date:							
In 2 years	0.066	0.066	-0.179	0.121	0.364	0.088	-0.056
	(0.142)	(0.144)	(0.117)	(0.203)	(0.204)	(0.170)	(0.258)
Next year	0.018	0.022	-0.131	0.092	0.083	-0.118	0.029
	(0.098)	(0.100)	(0.102)	(0.137)	(0.209)	(0.173)	(0.189)
This year	-0.364	-0.353	-0.587	-0.241	-0.141	-0.620	0.045
	(0.143)	(0.145)	(0.170)	(0.182)	(0.281)	(0.197)	(0.268)
Last year	-0.025	-0.014	-0.094	-0.048	0.131	-0.288	0.033
	(0.115)	(0.115)	(0.123)	(0.132)	(0.191)	(0.193)	(0.212)
Observations	4218	4218	4218	4218	4218	4218	4218
Mean of DV	3.46	3.30	1.30	1.68	0.33	0.15	0.11
Spatial FE	District	District	District	District	District	District	District
Temporal FE	Year	Year	Year	Year	Year	Year	Year
Joint p-value	<0.01	<0.01	<0.01	0.190	0.106	<0.01	0.973
This vs. last:							
Difference	0.338	0.339	0.494	0.192	0.272	0.332	-0.012
p-value	<0.01	<0.01	<0.01	0.119	0.196	0.020	0.956

Note: Standard errors clustered at 2018 district level in parentheses.

Table B4: Electoral cycle by land types – Ignitions, District and Province $\times$ Year FE

	(1) All Forest	(2) Concession	(3) Oil Palm	(4) Fibre	(5) Logging	(6) Unleased	(7) Protected
Election date:							
In 2 years	0.020	0.018	-0.123	0.226	0.030	0.022	-0.100
	(0.048)	(0.085)	(0.095)	(0.100)	(0.251)	(0.069)	(0.115)
Next year	-0.033	-0.000	0.025	0.062	-0.332	-0.066	-0.063
	(0.056)	(0.058)	(0.076)	(0.087)	(0.233)	(0.078)	(0.113)
This year	-0.014	-0.013	-0.133	0.181	-0.237	-0.083	-0.078
	(0.075)	(0.104)	(0.108)	(0.119)	(0.206)	(0.090)	(0.096)
Last year	0.138	0.163	0.122	0.189	0.021	0.044	0.083
	(0.052)	(0.064)	(0.084)	(0.094)	(0.168)	(0.049)	(0.113)
Observations	4218	4218	4218	4218	4218	4218	4218
Mean of DV	17.63	9.04	4.00	4.13	0.90	6.92	3.37
Spatial FE	District	District	District	District	District	District	District
Temporal FE	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year
Joint p-value	<0.01	<0.01	0.100	0.026	0.207	0.035	0.143
This vs. last:							
Difference	0.152	0.176	0.255	0.008	0.258	0.127	0.161
p-value	0.040	0.069	0.019	0.929	0.192	0.105	0.054

Note: Standard errors clustered at 2018 district level in parentheses.

Table B5: Electoral cycle by land types – Total area burned, District and Province × Year FE

	(1) All Forest	(2) Concession	(3) Oil Palm	(4) Fibre	(5) Logging	(6) Unleased	(7) Protected
Election date:							
In 2 years	0.081	0.177	-0.078	0.614	0.034	0.140	-0.561
	(0.120)	(0.177)	(0.160)	(0.228)	(0.273)	(0.122)	(0.162)
Next year	-0.118	0.012	-0.126	0.387	-0.542	-0.125	-0.278
	(0.110)	(0.121)	(0.164)	(0.174)	(0.294)	(0.128)	(0.169)
This year	0.059	0.193	0.143	0.472	-0.327	-0.037	-0.378
	(0.144)	(0.206)	(0.216)	(0.283)	(0.232)	(0.153)	(0.163)
Last year	0.190	0.279	0.134	0.465	0.048	0.059	-0.091
	(0.085)	(0.119)	(0.135)	(0.195)	(0.182)	(0.080)	(0.189)
Observations	4218	4218	4218	4218	4218	4218	4218
Mean of DV	75.61	41.14	18.08	20.14	2.92	27.12	14.39
Spatial FE	District	District	District	District	District	District	District
Temporal FE	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year
Joint p-value	0.016	0.037	0.353	0.087	0.042	0.013	<0.01
This vs. last:							
Difference	0.130	0.087	-0.009	-0.007	0.374	0.096	0.287
p-value	0.374	0.652	0.969	0.970	0.082	0.450	0.044

Note: Standard errors clustered at 2018 district level in parentheses.

Table B6: Electoral cycle by land types – Slash and burn, District and Province × Year FE?

	(1) All Forest	(2) Concession	(3) Oil Palm	(4) Fibre	(5) Logging	(6) Unleased	(7) Protected
Election date:							
In 2 years	0.078	0.076	-0.081	0.269	-0.021	0.045	-0.222
	(0.098)	(0.101)	(0.113)	(0.115)	(0.255)	(0.163)	(0.308)
Next year	-0.013	-0.009	-0.090	0.167	-0.399	-0.314	-0.349
	(0.084)	(0.086)	(0.122)	(0.100)	(0.281)	(0.235)	(0.279)
This year	0.001	0.013	-0.155	0.268	-0.509	-0.440	0.158
	(0.111)	(0.116)	(0.118)	(0.127)	(0.191)	(0.219)	(0.333)
Last year	0.094	0.100	0.077	0.129	-0.163	-0.131	-0.518
	(0.066)	(0.067)	(0.107)	(0.090)	(0.192)	(0.195)	(0.204)
Observations	4218	4218	4218	4218	4218	4218	4218
Mean of DV	3.46	3.30	1.30	1.68	0.33	0.15	0.11
Spatial FE	District	District	District	District	District	District	District
Temporal FE	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year	Prov-year
Joint p-value	0.083	0.124	<0.01	0.117	0.055	<0.01	0.022
This vs. last:							
Difference	0.094	0.086	0.232	-0.138	0.346	0.309	-0.676
p-value	0.389	0.448	0.091	0.109	0.175	0.019	0.025

Note: Standard errors clustered at 2018 district level in parentheses.

Figure B1: Electoral cycles in forest fires: No split children

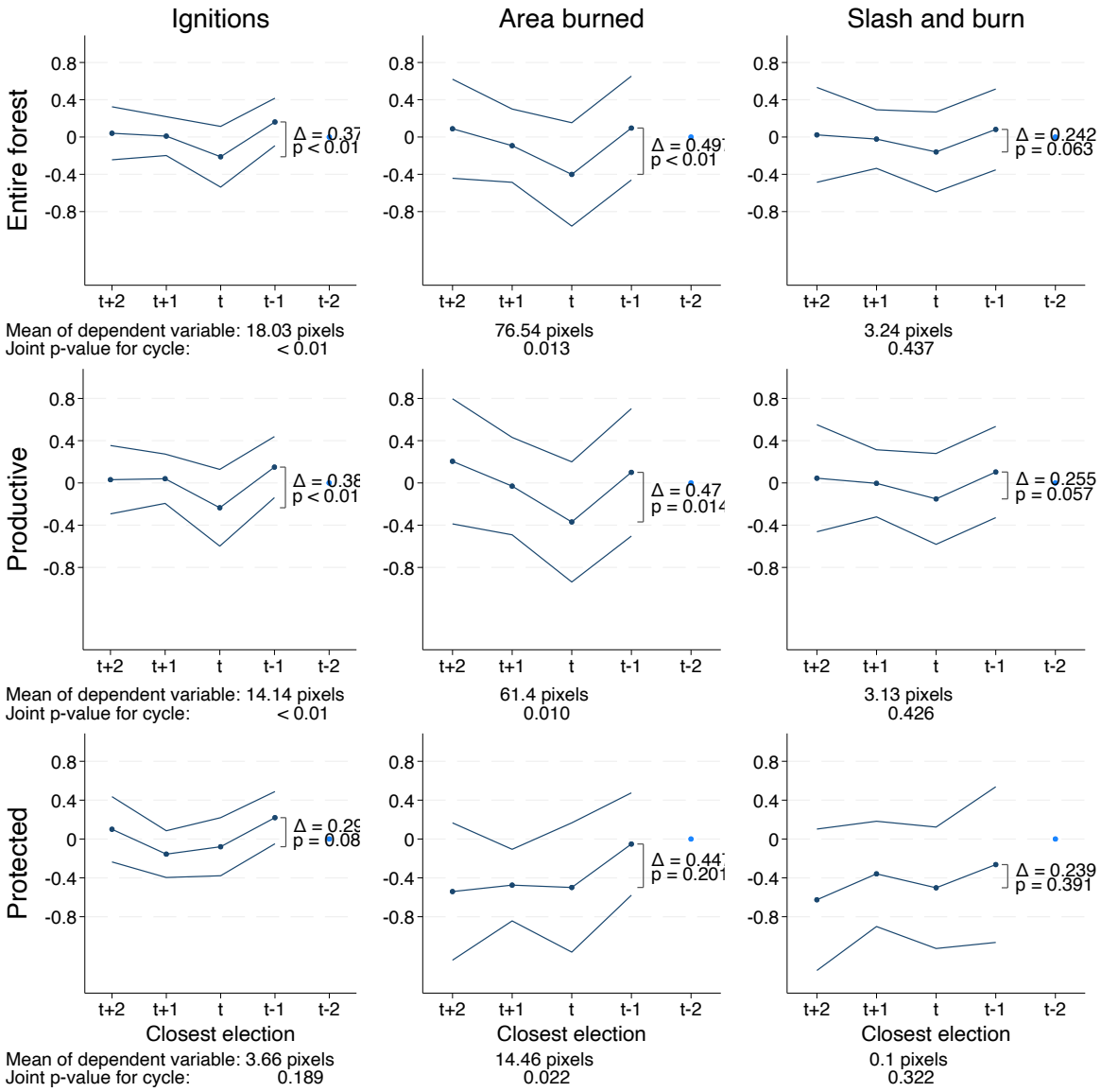


Figure B2: Electoral cycles in forest fires: No parent districts