Supplementary Information

February 26, 2022

Contents

A Context

In this section, we provide additional details regarding the Ugandan political environment. We show that the empirical case is consistent with the formal model and that Uganda's context is comparable to many other low-income countries. To do so, we leverage data from the Varieties of Democracy (V-dem) project, that uses teams of country experts to code indicators of democracy over time (Coppedge et al., 2021).

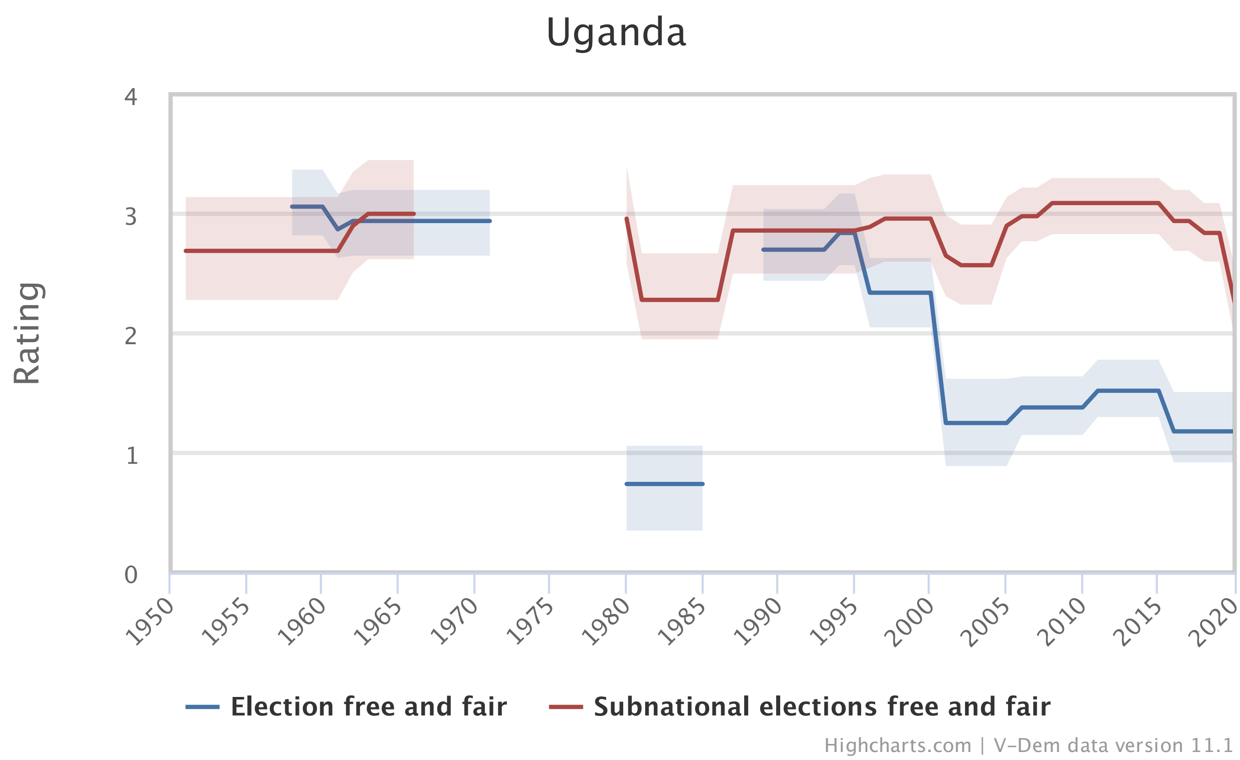

Figure 1: **Uganda: Election Cleanliness at National and Subnational Levels** Note: Red indicates subnational and blue indicates national level of elections.

First, one key aspect of the study context is that subnational level elections are relatively free from fraud. This is important since our model does not include fraud as part of the relative advantage of the incumbent party. Instead, our model assumes that election returns reflect voters' preferences, which are anticipated by incumbents, parties and potential challengers in their decisions leading up to elections. Further, our empirical analysis hinges on the electoral data being sound, given that our key outcomes are derived from Uganda's official returns.

V-dem codes the extent to which national and subnational elections are free and fair on five-category scale. Here, 0 indicates *"No, not at all. The elections were fundamentally flawed and the official results had little if anything to do with the will of the people."*; 1 indicates *"Not really. While the elections allowed for some competition, the irregularities in the end affected the outcome of the election"*; 2 indicates *"Ambiguous. There was substantial competition and freedom of participation but there were also significant irregularities. It is hard to determine whether the irregularities affected the outcome or not."*; 3 indicates *" Yes, somewhat. There were deficiencies and irregularities but these did not in the end affect the outcome."*; and 4 indicates *"Yes. There was some amount of human error and logistical restrictions but these were largely unintentional and without significant consequences."*

As shown in Figure 1, in 2011, the start of our study, subnational elections (red) were largely considered free and fair. National elections (blue) are much less so, being rated by experts at around a 1.5. Figure 2 and 3 contextualize Ugandan national and subnational elections, respectively, in 2011. We can see that national

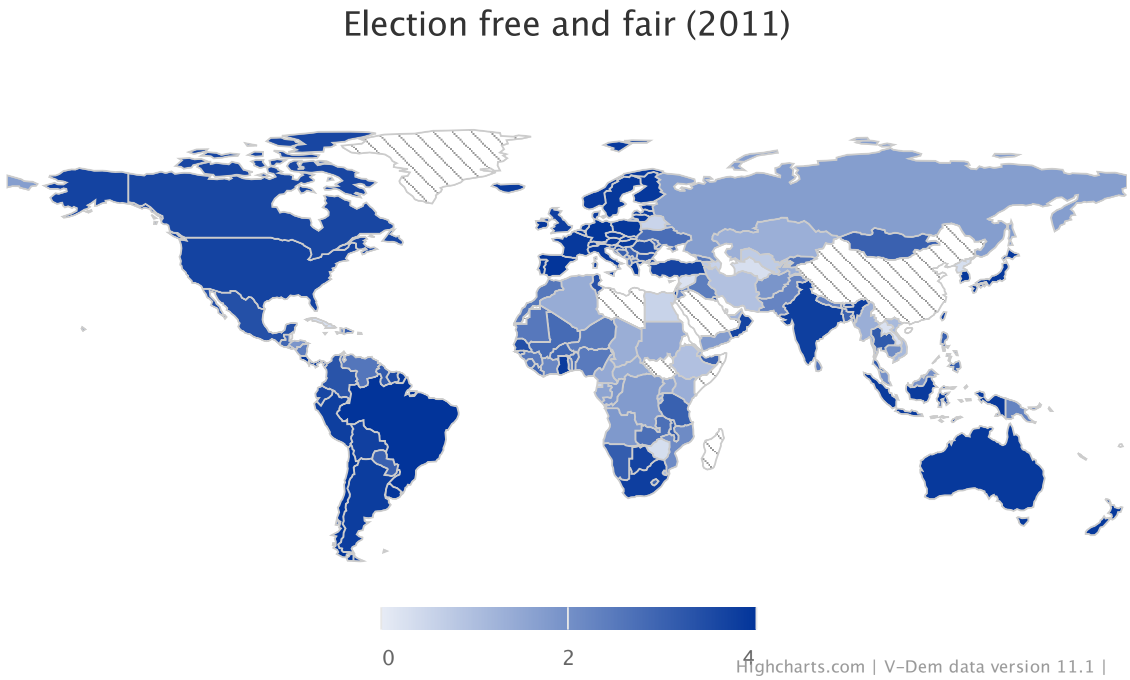

Figure 2: **World Map National Election Cleanliness (2011)** Note: Darker blue indicates more free and fair.

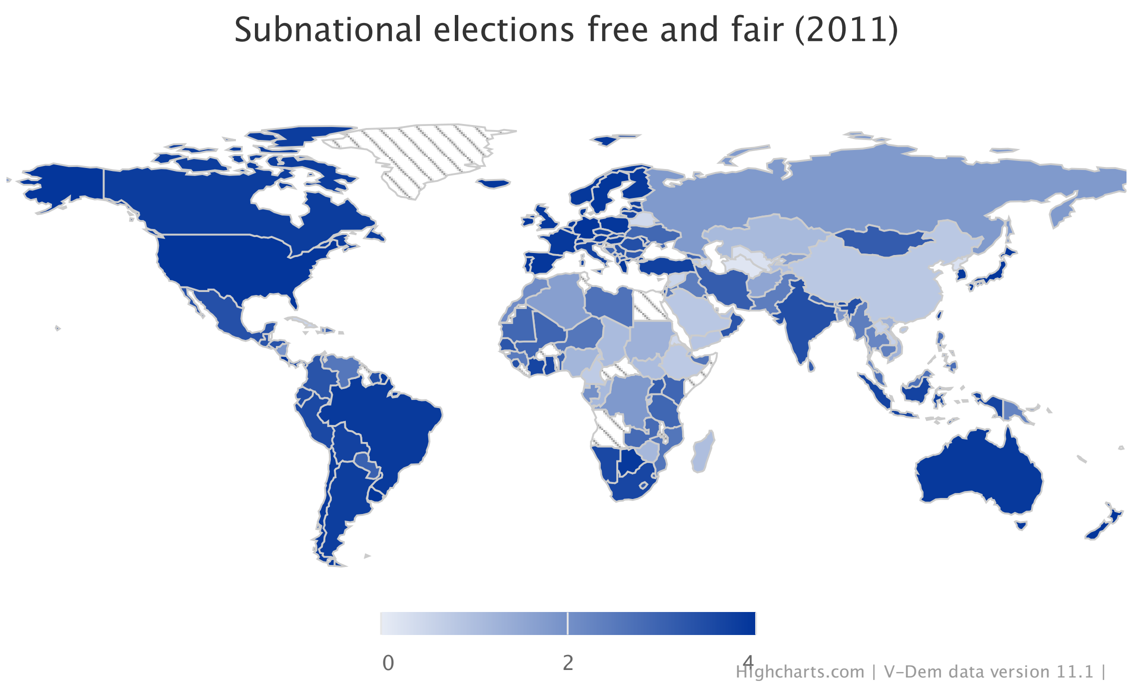

Figure 3: **World Map Subnational Election Cleanliness (2011)** Note: Darker blue indicates more free and fair.

level election 'cleanliness' is comparable to many low-income countries in sub-Saharan Africa, the Middle East, and Asia, reflecting that electoral authoritarianism is the modal regime type in sub-Saharan Africa and the world (Alizada et al., 2021). More importantly, subnational elections' cleanliness in Uganda is on par with neighboring countries such as Kenya and Tanzania. In sum, V-dem's data reflect the common understanding that subnational elections are reasonably free and fair in Uganda, despite the authoritarian nature of Museveni's regime at the national level.

Secondly and relatedly, multipartyism, or the presence of multiple parties competing in elections, exists generally across the subnational level in Uganda, even if in some regions one party has a relatively large party advantage. Of course, our study data show that multipartyism exists across our study context of 20 districts, with a wide range of values of *relative party advantage*. However, V-dem's data on the geographic extent of multipartyism helps to shed light on the electoral context at the subnational level more generally across Uganda. V-dem asks *"Which of the following best describes the nature of electoral support for major parties (those gaining over 10% of the vote)?"*. The coding is 0 for *"most major parties are competitive in only one or two regions of the country, i.e., their support is heavily concentrated in a few areas"*; 1 indicates that"most major parties are competitive in some regions of the country, but not in others."; and 2 indicates that *"most major parties are competitive in most regions of the country."* Figure 4 shows that Uganda scores close to a 2.

These data are broadly consistent with scholarly accounts of Ugandan elections (which mostly focus on the character of the national, rather than subnational, elections). There is certainly an uneven playing field (Izama and Wilkerson, 2011; Golooba-Mutebi and Hickey, 2016; Khisa, 2019). However, the NRM did not engage in systematic election rigging even at the national level during the study period (Hyde and Marinov, 2012). In the 2011 elections, for example, Conroy-Krutz and Logan (2012) documents how the NRM seeks an edge in the national election through massive pre-election spending on public services and infrastructure, administrative unit proliferation, and 'handouts.' According to Conroy-Krutz and Logan (2012) the NRM did not engage in outright rigging, in part, in fear of alienating foreign aid and FDI.

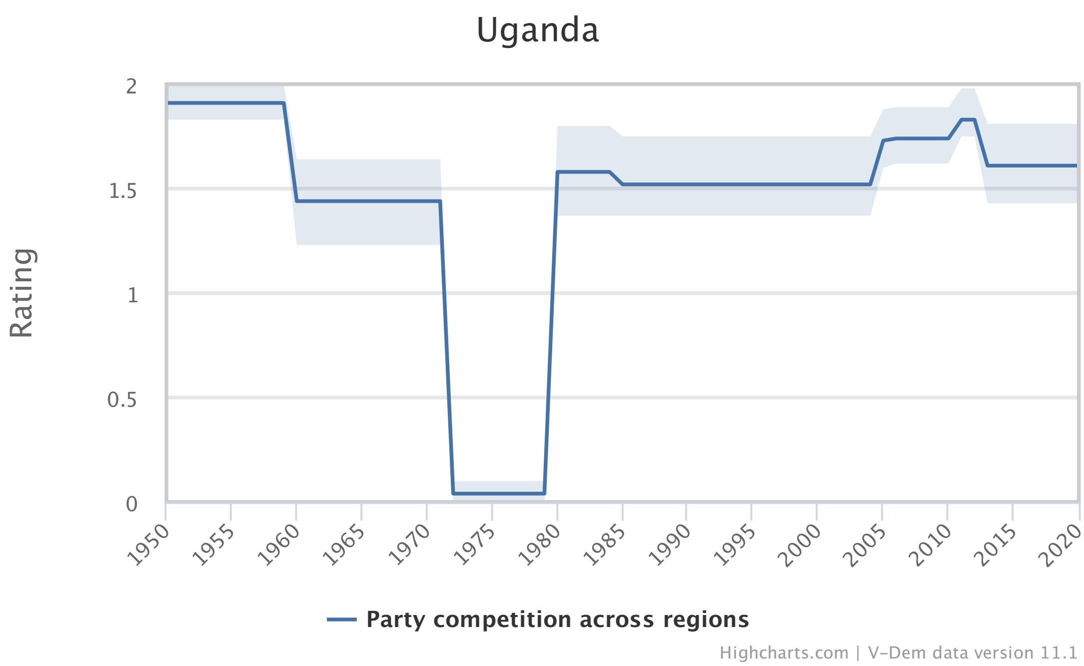

Figure 4: **Extent of Multipartyism across Subnational Units**

Third, in our model, parties compete over valence issues (e.g., improving public service delivery to the locality), rather than on wedge issues. Moreover, while candidates in our context are expected to hand outs 'gifts' around elections to curry favor with voters, our model implicitly assumes there is no infrastructure for monitoring citizens' vote choice. This type of electioneering is reflected in the V-dem data. V-dem asks *"Among the major parties, what is the main or most common form of linkage to their constituents?"* whereby a party-constituent linkage refers to the *"sort of good that parties offer in exchange for political support and participation in party activities"*. In Figure 5 we can see that Uganda scored around a 2, indicating that the type of good is a *"local collective good (e.g., wells, toilets, markets, roads, bridges, and local development)*, rather than *clientelistic* ("0"), *mixed clientelistic and local collective"* ("1"), *"mixed local collective and policy/programmatic"*

("3"), or *"policy/programmatic"* ("4"). These data are broadly consistent with the account of Platas and Raffler (2021), who show that parties at the local level compete over valence issues that strongly depend on representatives' effort and ability in working for their constituents.

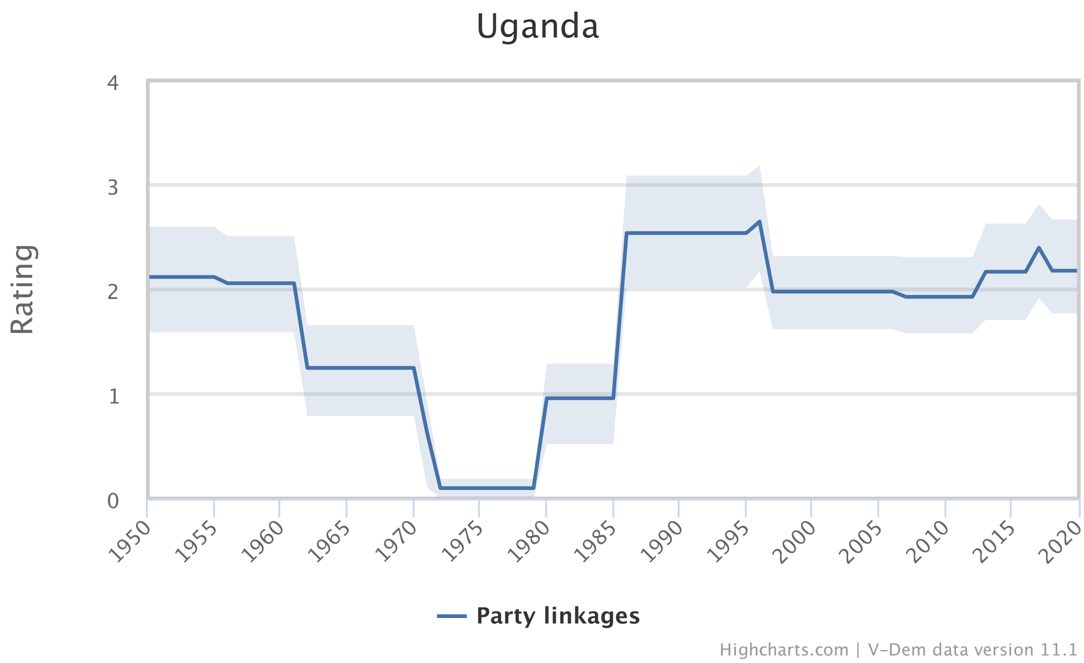

Figure 5: **Party Linkages**

B Scorecard Methodology

ACODE's methodology for collecting data on politicians' performance includes several steps. First, ACODE engages in document review of service delivery and infrastructure reports, budgets, planning documents, minutes of district councils and their committees and other relevant documents. Second, ACODE researchers conduct interviews with politicians; and subsequently any assertions made by politicians are followed up with written evidence. Third, field visits are conducted at service delivery units (e.g. schools, clinics). Fourth, ACODE facilitates focus group discussions with citizens at the sub-county level with a sampling methodology that seeks gender-parity of community leaders, as well as representation of 'ordinary' citizens and youth. Last, interviews with technical staff in the bureaucracy are conducted at both the district and sub-county levels. Participants give informed consent and participation is voluntary.

The district councilors' scorecard is divided into four components, as depicted in Figure 3 in the main text. Each indicator is assigned a score, awarded with a threshold approach. This means that a district councilor who, for example, has pushed forward more motions in plenary sessions than the designated threshold, receives the same number of points as another politician who has only just met the threshold. One disadvantage of this method is that score-conscious politicians may not have a strong incentive to exert further effort once an indicator threshold is reached. However, there are also advantages to this scoring system. For one, politicians have different sized constituencies, and politicians with larger constituencies are not disadvantaged. Another advantage is that it is a scoring system that Ugandan politicians and citizens can easily comprehend. All indicators sum up to a maximum possible 100 points, similar to school grades in Uganda.

To strengthen the reliability of the disseminated scores, ACODE undertakes several quality-control measures:

- The scorecard undergoes periodic reviews by an expert Taskforce comprised of academics, officials from the Ministry of Local Government, representatives from the parliamentary committee on local governments, district technical and political leaders, and civil society representatives.
- District research teams are made up of three researcher who reside in the study districts and speak the local languages. Those researchers are not allowed to be involved in electoral or partisan politics. Prior to data collection, the research teams are trained intensively over a centralized three-day Workshop accompanied by an official Researchers' Guide in basic methods, ethics, etc.
- Following data collection, district research teams come together for a three-day workshop to peer-review the information collected and compute scorecard marks. A team of experienced Lead Researchers directly monitor and supervise the research teams, and are also responsible for managing fieldwork and producing district reports, as well as doing on-spot checks.
- The HQ leadership team and a technical backstopping team are responsible for the final review and validation of data used in the scoring. Before publication of the scores, the report is externally reviewed and edited to ensure consistency and quality of content. Thus, the scorecard has a multi-layered review. A full description of the ACODE methodology and reporting can be found at `http://www.acode-u.org/documents/PRS_64.pdf`

C Field Experiment Details

In 2009, ACODE launched the Local Government Councilor Scorecard Initiative in consultation with local stakeholders (e.g., district officials) in 10 pilot districts, as well as national-level stakeholders such as the Ministry of Local Governments, Uganda's Local Government Association,[1], and other NGOs operating in the governance. It has since expanded the scorecard program to 30 districts; though at the start of our study, ACODE was operating in 20 districts across Uganda.[2]

At the beginning of a legislative term, ACODE conducts orientation sessions on councilors' legally defined duties, including advice on how best to fulfill these duties. The orientation also entails an explanation of the scorecard initiative, including the design, methodology, and quality control. As for scorecard construction, ACODE's team of researchers collects the underlying data to produce the scorecard annually in reference to the previous fiscal year (July-June). The scorecard is solely based on administrative data (e.g., meeting minutes, visiting books in schools and health clinics) and does not rely in any way on citizen's attitudes or perceptions.

Once the scorecards are complete and vetted (around October each year), ACODE disseminates them in district events attended by district councilors, senior bureaucrats, party officials, and (at times) local media outlets. At these events, ACODE representatives remind attendees of councilors' legally-defined job duties and the scorecard methodology, and make public the scores of all district councilors. The information presented in these dissemination events is further summarized in district reports that are both printed and handed out to workshop attendees and posted online.

ACODE activities are salient to district councilors. In an in-person survey conducted with councilors in ACODE districts soon after the first scorecard (2011-2012) of the legislative term has been disseminated in district plenary workshops, 96% of councilors knew about the program, and over 85% could name their score within 10 points. By contrast, in-person surveys conducted at the same time (late 2012) with

[1]The Ugandan Local Government Association (ULGA) is an associational group that represents and advocates for the constitutional rights and interests of local governments, and gives support and guidance to make common positions on key issues that affect local governments.

[2]Kanungu, Ntungamo, Rukungiri, Kabarole, Hoima, and Buliisa (Western region); Agago, Amuru, Gulu, Nebbi, and Lira (North and West Nile region); Amuria, Jinja, Kamuli and Soroti (Eastern region); Nakapiripirit and Moroto (Northeast or Karamajong region); Lowero, Mukono and Mpigi (Central region).

a sample of citizens in every constituency (sub-county) in ACODE districts, suggest that knowledge of the scorecard, and its accompanying scores, does not naturally trickle down to voters, at least not early in the term. Councilors generally view ACODE as impartial and its scorecard as reliable. Tellingly, in a survey the PIs conducted with councilors in late 2015, 94% of councilors recommended that the scorecard initiative be scaled up throughout the country.

Intense Dissemination of Performance Scorecard to Citizens

We use a downstream experimental design, leveraging ACODE's "Intense Dissemination" (ID) program to further estimate the effects of citizens holding incumbent performance information similar to the one in the hands of local elites. ACODE implemented the ID program in 20 districts, whereby district councilors were randomly selected to either have their scores disseminated down to their constituents (treatment), or not (control). Following random assignment, ACODE held two rounds of parish-level community meetings in treated constituencies. The first set of meetings took place in fall 2013 (354 meetings; $12{,}949$ attendees; sharing information on 2012-2103 scores) and the second in fall 2014 (339 meetings; $14{,}520$ attendees; 2013-2014 scores). To be clear, ACODE created an annual performance scorecard for *both treatment and control councilors*, and shared it with local elites in district workshops, as discussed above. The ID treatment thus is the additional transparency to citizens above and beyond transparency to local political elites. Below we provide additional information on the ID dissemination program:

Meeting Recruitment. An average of 40 community members attended each dissemination meeting. Although open to the public, ACODE mobilized specifically local opinion leaders—lower-tier government officials, religious leaders, public service providers, and members of community organizations—whom could act as initial nodes in a wider dissemination process to other community members. To that end, meeting attendees were given fliers, posters, and calendars with a summary of the councilors' performance information to display in prominent public places.

Meeting Content. ACODE facilitators first discussed how councilors' statutory responsibilities map onto the delivery of public services by providing information on their job duties, national and district government responsibilities, and service delivery standards. Then, ACODE disseminated the scores of councilors benchmarked against the scores of all other district councilors. ACODE also collected the cell phone numbers of meeting attendees and subsequently sent out periodic text messages reinforcing the information delivered at those meetings. The research team deployed enumerators to community meetings to record information on meetings' agenda and to conduct short exit surveys with five randomly selected participants to test for content comprehension and retention. We find that the meetings were successful in fulfilling their goals.

Incumbent performance transparency initiatives should only have an effect if they change incumbent's reelection probabilities (i.e., citizen priors). We use the baseline citizen survey, conducted in summer 2012, to demonstrate that the information ACODE disseminated to constituents was both new and salient, and hence potentially consequential. First, only 9% of survey respondents reported hearing "something" about the scorecard initiative. Tellingly, when asked to evaluate their councilors' baseline performance across the four types of legally defined job duties, respondents' evaluations did not positively correlate with the 2011–2012 councilors' scores, and a majority of respondents admitted that they had no means of assessing their councilors' efforts to fulfill his or her job duties.

D Ethics Statement

The ethics of the research components of this study were assessed and inclusive of local actors from the design to the dissemination stage (see symposium Michelitch (2018) for a discussion of local actor inclusivity in Global South field research). Official permits were granted by three local reviews boards in Uganda. The first review board we used at Innovation for Poverty Action (IPA) specializes in social science field experimental research conducted in the Global South, and is thus well-positioned o review projects such as the present study. The second IRB, Uganda's National Council for Science & Technology is well-positioned to assess the adequacy of the study to local conditions. Finally, the IRB at the Office of the President in Uganda certified that the research project is not deemed politically sensitive.

In this study, we collected administrative data and survey data with politicians in their capacity as public officials, with whom consent was obtained in all survey activities. The questionnaires did not involve sensitive questions in the context of the regime that would threaten the safety of politicians or enumerators. The questionnaires were piloted together with, and implemented by, local enumerators employed by IPA. The design of the study was done in conjunction with our implementing policy partner.

Regarding the policy interventions, all program component we assess were crafted and implemented by ACODE, a local Ugandan non-partisan non-governmental organization that is highly respected in this context. ACODE's scorecard activities were already taking place in years prior to our involvement, and would have continued to take place with or without the evaluation of the research team. Indeed, the Local Government Scorecard Initiative was truly homegrown: ACODE decided on what dimensions politicians were going to be scored; it decided in which districts to operate; it hired, trained and supervised the field team that collected the data that fed into politicians' scores; it processed the data on politicians' activities and engaged in its own quality control processes. Importantly, ACODE designed and executed the scorecard dissemination events, both at the district-level and at the community-level. Thus, the research team did not participate in the design and the delivery of any aspect of the evaluated program.

ACODE's efforts also involved many local stakeholders. Prior to the project launch and in an ongoing relationship, ACODE engaged in a series of consultation meetings with the Uganda Local Government Association (ULGA), the Ministry of Local Government, and (within each district) the district chairperson and high ranked civil servants to get their input about all aspects of the program (and blessing). ACODE obtained the consent of all district politicians prior to the launch of the scorecard project.

The research team also has contributed important information to ACODE (and the donor) through the evaluation. Importantly, the donor intended for the research to be a source of learning for continued support of the organization, not a determination of whether to support ACODE moving forward. By sharing the results of the research with ACODE, the research team aided in learning about effective ways to improve political accountability in Uganda , and arguably elsewhere in similar contexts. Finally, ACODE's founder, Godber Tumushabe, and other members of ACODE, also became institutional members of EGAP and have attended multiple meetings following the initiation of the partnership, benefiting the organization in improving its networks among academics and donors. Given the local roots of ACODE and the broad support that the scorecard initiative received from Ugandan stakeholders, alongside local involvement in all aspects of the research components, we believe that our evaluation does not constitute a violation of ethical principles.

E Power Analysis

We perform *ex-post* power analysis for our study's core outcome – win again – reported in the main text, Table 2. For models 4, 6, 8 in Table 2 (both Panel A and Panel B), we estimate both (a) the statistical power we had given the the actual sample size and (estimated) effect size, and (b) how big the sample size needed to be so that we would be able to identify the treatment effect over 80% of the times when the treatment really does have an effect. Given the complexity of our treatment effects regression models—which include a treatment indicator, a moderator, covariates, interaction terms, clustered standard errors and treatment assignment probability weights— we use simulations rather than canned software. Detailed steps are as the following:

1. Specify a set of sample sizes we would be considering, starting at $N = 20$ and ending at $N = 600$.
2. Specify the standard significance level, which is $\alpha = 0.05$ in our case.
3. Specify the number of simulations to conduct for each sample size N ($sim = 500$).
4. For each sample size selection N, we did the following analysis:(i) Simulate control potential outcomes: instead of sampling the binary outcome based on binomial distribution, we directly sample units from the control group of our true dataset to replicate the outcome distribution as much as possible. To take into consideration different patterns within each district, we randomly select rows of different districts from the control group in proportion to how many units were originally in each district in the control group. (ii) Simulate treatment potential outcomes: treatment potential outcomes were generated by adding our observed treatment effect in each model to simulated control potential outcomes. (iii) Randomize treatment assignment: similar to randomization inference simulation, treatment assignment is randomly assigned within each district based on the treatment assignment probability of each district. (iv) Reveal outcomes based on treatment assignment: revealed outcome = simulated treatment potential outcomes * treatment assignment + simulated control potential outcomes * (1 - treatment assignment) (v) Run the exact same regression analysis: We run the exact same regression model using simulated treatment variable and simulated revealed outcome variable. (vi) Extract and save p.value. (vii) Repeat stage (a)–(f) 500 times.
5. Calculate the proportion (mean) of saved p.values that gives a significant result. This is the statistical power given this sample size N and our observed treatment effect.
6. Repeat #1 - 5 for different sample sizes.

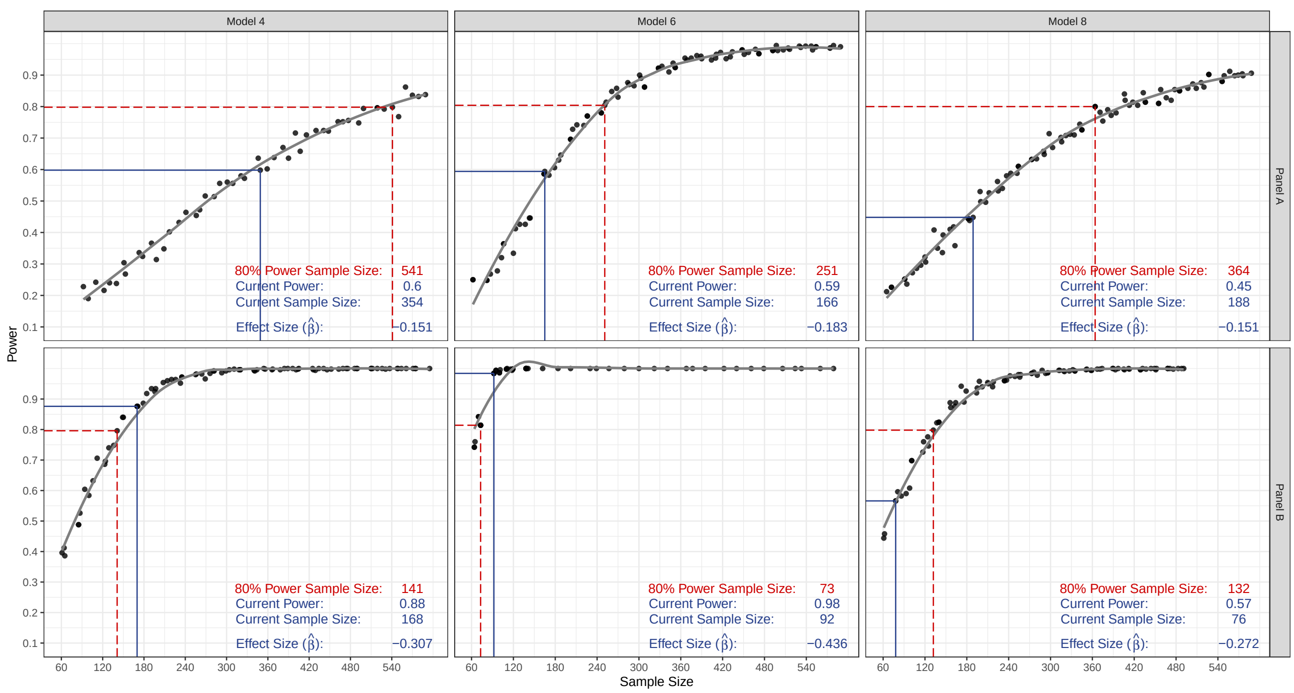

Figure 6: **Power Analysis Simulation (for Table 2 in the main text)**.The first row simulates the models reported in Table 2 Panel A (unconditional sample), the second row is Panel B (sample conditional on winning party nomination). Each column represents a model number. In each subfigure, we report in blue the observed effect sizes ($\hat{\beta}$), current sample sizes, and the achieved power based on the actual effect size and sample size. In red, we report the estimated sample size that would be required in order to reach a power of 80% under the current research design and estimated effect size ($\hat{\beta}$).

Figure 6 shows clearly that we were under-powered when estimating treatment effects using the unconditional sample (main text, Table 2, Panel A), but well-powered when estimating treatment effects for the restricted sample conditional on winning party nomination (Panel B).

F Stability of Scores Overtime

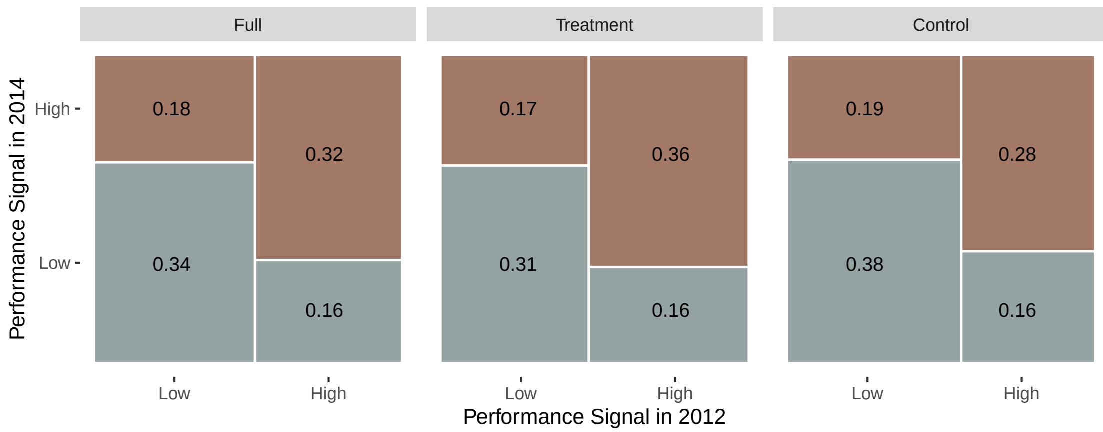

Figure 7: **Stability of performance scores overtime (binary measure)**. The three panels report the stability of the performance signal for the Full sample ($n = 354$), Treatment, and Control separately.

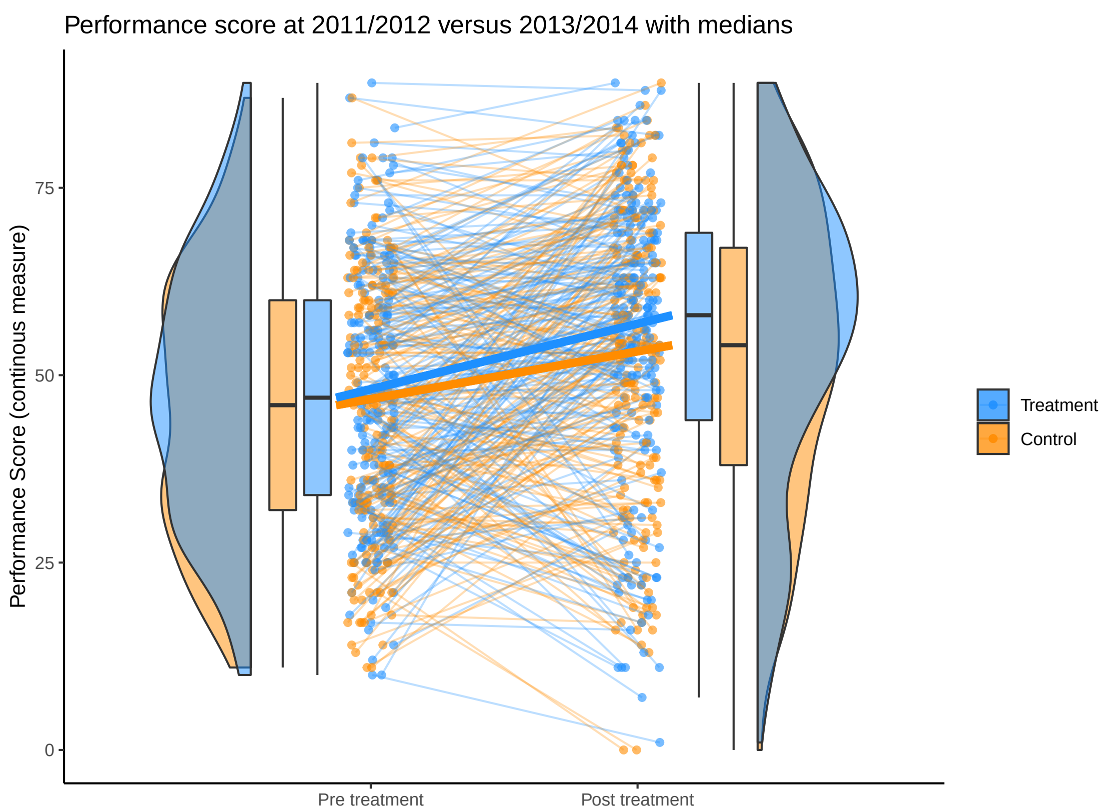

Figure 8: **Stability of performance scores over time (continuous measure)**. The Line Plot uses the continuous performance scores measure in 2011-12 and 2013-14. Treatment group is in blue; the control group in orange. The half violins shape the distribution of performance scores in different group, pre- versus post-treatment. The boxplots and thick lines in the middle connect median values of each group, pre versus post-treatment.

G Additional Tables and Figures

G.1 Descriptive Statistics

	N	Mean	SD	Min	Max
Outcomes					
Won again	354	0.34	0.47	0.00	1.00
Vote share	226	0.50	0.25	0.04	1.00
Nomination	352	0.48	0.50	0.00	1.00
Run again	335	0.92	0.28	0.00	1.00
Number of candidates	226	2.92	1.38	1.00	8.00
Effective number of candidates	226	2.20	0.79	1.00	5.11
Treatment					
Treatment	354	0.51	0.50	0.00	1.00
Moderators					
Scorecard (2013-2014)	354	53.34	19.63	0.00	89.00
Party Advantage	354	0.24	0.30	-0.72	0.87
Councillor covariates					
Mandate	354	1.43	0.50	1.00	2.00
Councillor is NRM in 2011	354	0.78	0.42	0.00	1.00
Councillor age	354	44.70	8.76	25.00	76.00
Councillor asset motor	354	0.39	0.44	0.00	1.00
Number of terms served as LC5 councilor	354	0.60	0.77	0.00	4.00
Councillor is a Speaker	354	0.05	0.21	0.00	1.00
Constituency covariates					
Population of the electoral area (Log)	354	9.54	1.10	6.23	13.52
Share of literacy in the electoral area	354	0.44	0.11	0.03	0.72
Ethnic-linguistic fractionalization in the electoral area	354	0.26	0.22	0.00	0.88
Poverty index in the electoral area	354	0.03	0.28	-0.40	2.12
Agricultural share of the electoral area	354	0.22	0.12	0.00	0.68

Table 1: **Descriptive Statistics**.

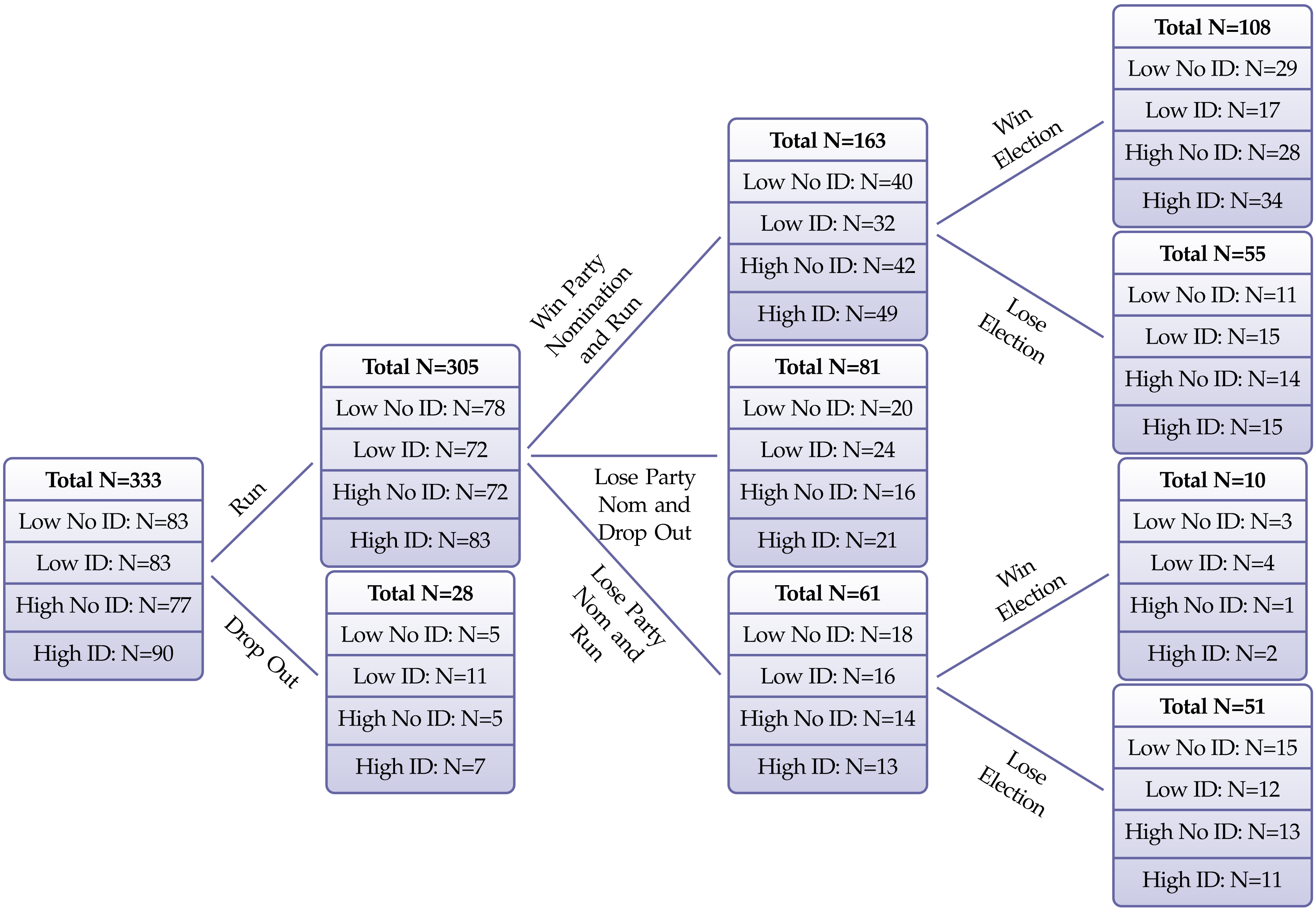

Figure 9: **Incumbent Outcome Tree**. Figure shows counts of incumbents branching from 2016 General Election processes: (1) decision to run again, (2) win party nomination and compete in the General Election, lose party nomination and drop out, or run as independent or switch parties, and (3) win or lose General Election. Figure includes incumbents who ran on a party ticket in 2011 General Elections (excludes 42 Independents) who participated in our survey (excludes 19 individuals who did not appear on the ballot in the 2016 General Election but for whom we do not know whether they chose not to run versus chose to run but lost the party nomination, as well as two individuals who were 'singletons', meaning they get dropped from regression estimates because they were the only units in their district of their treatment, performance, and party advantage status).

G.2 Balance Table

Variable	(1) No ID N/[Clusters]		(2) ID N/[Clusters]		T-test Difference (1)-(2)
	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	
Mandate as in master data	173	1.437	181	1.425	0.011
	[20]	(0.021)	[20]	(0.016)	
Councillor is NRM in 2011	173	0.770	181	0.774	-0.004
	[20]	(0.068)	[20]	(0.059)	
Councilor age	173	44.830	181	44.504	0.326
	[20]	(0.938)	[20]	(0.640)	
Councillor asset motor	173	0.407	181	0.386	0.021
	[20]	(0.037)	[20]	(0.038)	
N. of terms served as LC5 councilor	173	0.568	181	0.646	-0.078
	[20]	(0.070)	[20]	(0.071)	
Councillor is a speaker	173	0.047	181	0.044	0.003
	[20]	(0.015)	[20]	(0.010)	
Population of the electoral area (Log)	173	9.519	181	9.557	-0.039
	[20]	(0.067)	[20]	(0.071)	
Share of literacy in the electoral area	173	0.448	181	0.441	0.008
	[20]	(0.019)	[20]	(0.017)	
Ethnic-linguistic fractionalization	173	0.260	181	0.250	0.011
	[20]	(0.042)	[20]	(0.036)	
Poverty index in the electoral area	173	0.037	181	0.014	0.023
	[20]	(0.033)	[20]	(0.027)	
Agricultural share of the electoral area	173	0.223	181	0.221	0.002
	[20]	(0.018)	[20]	(0.011)	

Table 2: **Balance Table:** The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable master_district. Fixed effects using variable master_district are included in all estimation regressions. Observations are weighted using variable wid as pweight weights.***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

G.3 Randomization Inference

When sample sizes are small, it is advisable to report Randomization Inference (RI) p-values. Under the sharp null hypothesis of no treatment effect, all control units' outcome would have remained the same even if they were assigned treatment. In the other words, units in the control group and treatment group are interchangeable.

This insight provides the foundation of our simulation process and the interpretation of our simulations' results. The collection of all point estimates over a large number of simulations creates a reference distribution, given our sample size and research design more broadly (interactions, clustering, etc.). By comparing our actual estimated treatment effect ($\hat{\beta}$) to the reference distribution of a treatment effect universe, we can assess how likely it is to obtain an effect more extreme than ours.

Thus for each model in our main analysis, we calculated the "exact p-value" using simulation-based randomization inference through the following steps:

1. Randomly assign treatment and control to units within each district according to the achieved treatment assignment probability of each district.
2. Estimate the *original regression model* using the newly-generated treatment variable.
3. Save the point estimate of our main independent variable (the treatment indicator).
4. Repeat steps 1 - 3 for 10,000 times.
5. Plot the distribution of the collected 10,000 estimated treatment effects.
6. Calculate randomization inference p-value (This is the RI p-values we reported at the bottom of each regression table in the main text). The RI p-value is the proportion of times the simulated treatment effect was more extreme (two-tail) than the actual estimated treatment effect reported in our paper.

In Figure 10 to Figure 13, the histogram of the 10,000 simulated estimates *low performers* is plotted in grey with two tails at critical significance level of 0.05 shaded in darker color. In each figure, we present in blue the observed estimates ($\hat{\beta}$) and simulation-based randomization inference p-values that are reported at the bottom of Tables 2–5 in the main text. We also calculated and added $\beta_{0.05}$ in red, which is the effect size that we would have needed to obtain for statistical significance at 0.05 level with current sample size and model specifications.

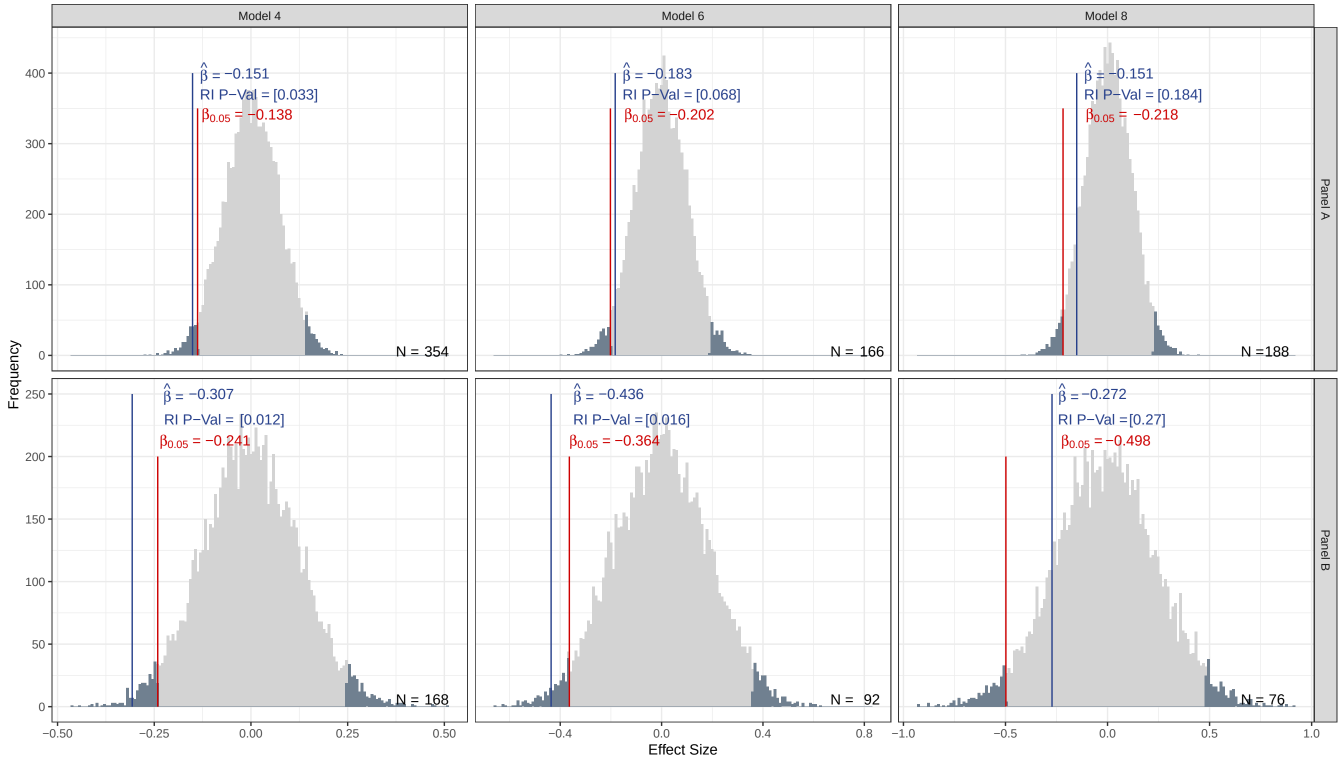

Figure 10: Randomization Inference Simulation for Table 2

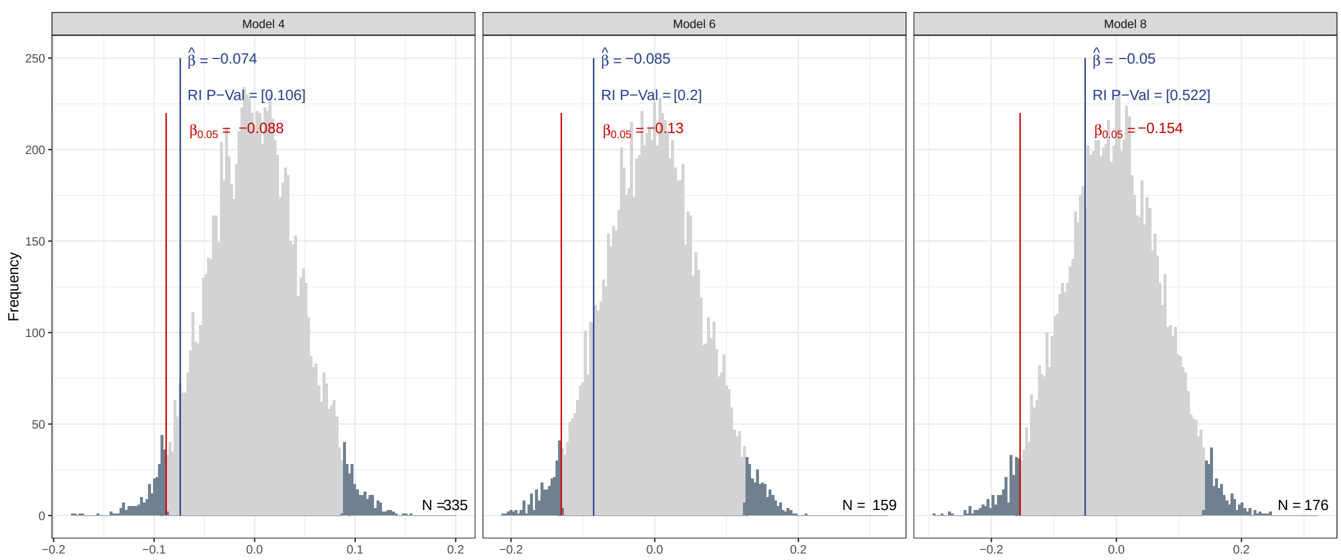

Figure 11: Randomization Inference Simulation for Table 3

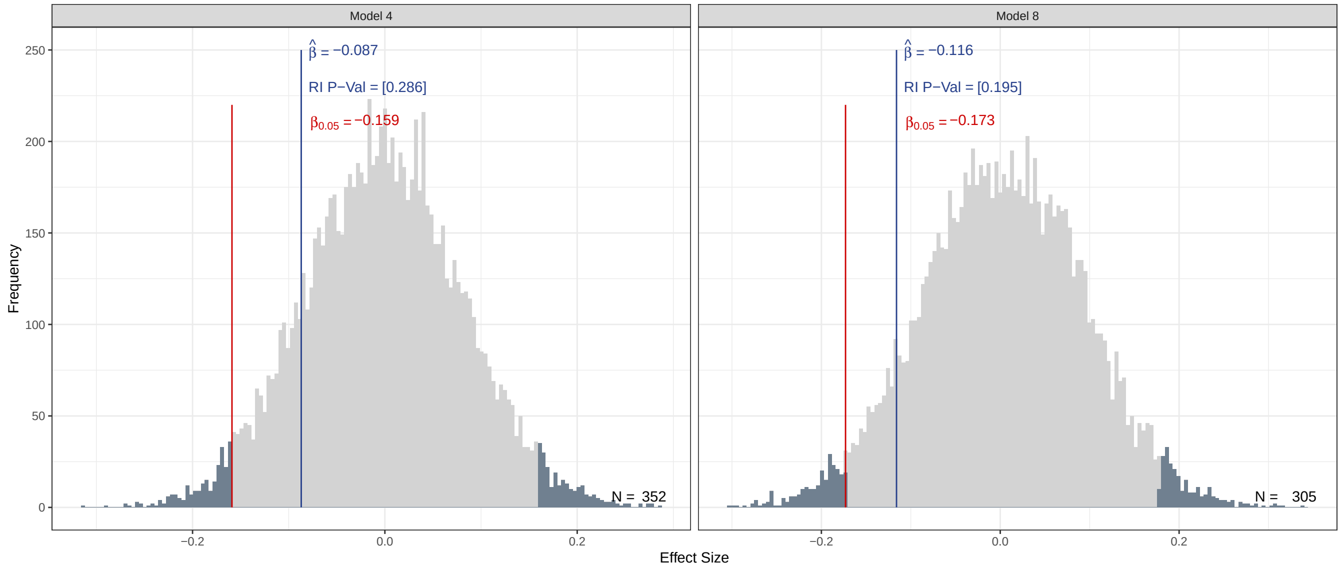

Figure 12: Randomization Inference Simulation for Table 4

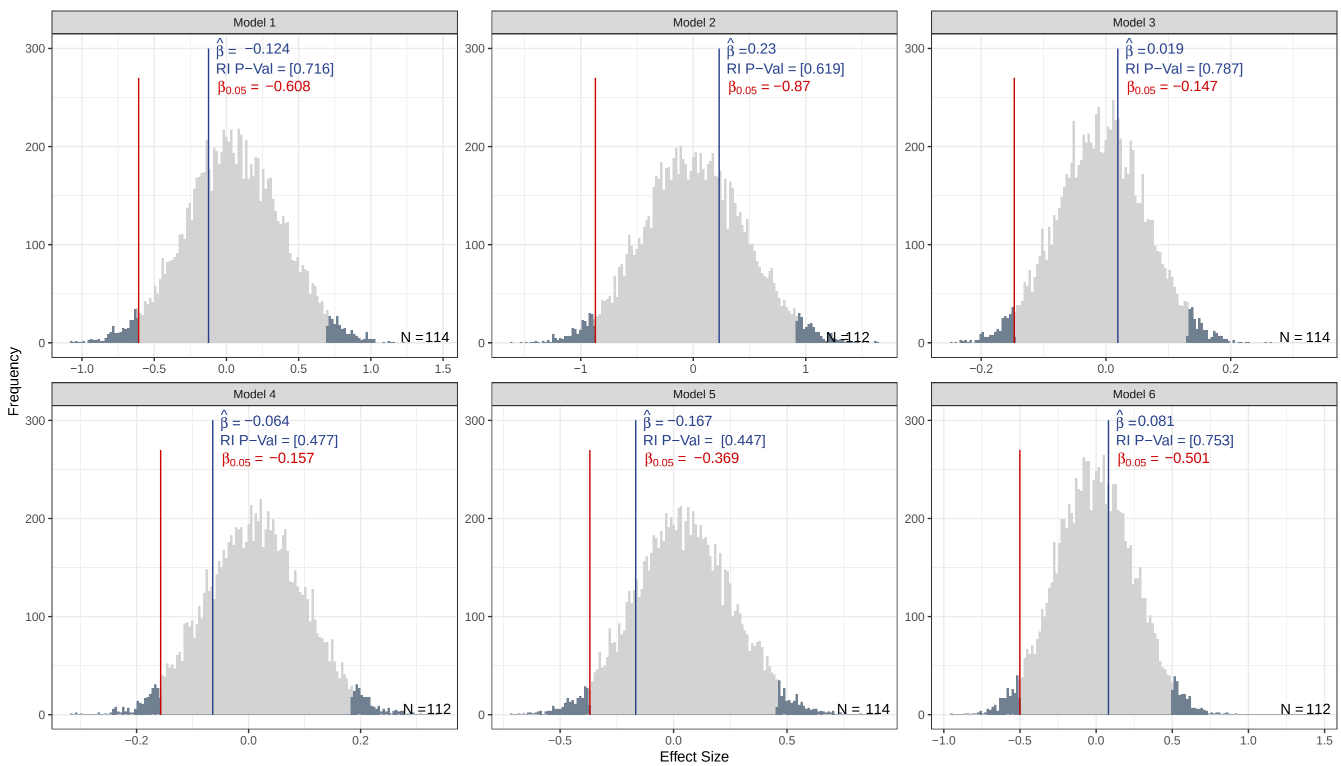

Figure 13: Randomization Inference Simulation for Table 5 Panel A

G.4 Robustness checks

Panel A: Full Sample

	Full				Low PA		High PA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	−0.049	−0.049	−0.058	−0.086*	−0.074	−0.053	−0.046	−0.059
	(0.049)	(0.042)	(0.051)	(0.045)	(0.095)	(0.108)	(0.100)	(0.099)
Performance			0.038	0.032	0.217	0.305**	−0.161**	−0.119
			(0.068)	(0.067)	(0.126)	(0.132)	(0.067)	(0.097)
Treatment × Performance			0.013	0.066	−0.046	−0.017	0.040	0.032
			(0.069)	(0.071)	(0.132)	(0.156)	(0.130)	(0.130)
Covariates	no	yes	no	yes	no	yes	no	yes
RI Pval (Low Performance)	[0.342]	[0.354]	[0.399]	[0.223]	[0.458]	[0.621]	[0.63]	[0.561]
ME (High Performance)			-0.045	-0.02	-0.12	-0.071	-0.006	-0.028
SE (High Performance)			(0.069)	(0.065)	(0.122)	(0.13)	(0.097)	(0.104)
N	354	354	354	354	166	166	188	188
R^2	0.07	0.14	0.07	0.14	0.14	0.28	0.17	0.26

Panel B: sample is conditional of winning party nomination

	Full				Low PA		High PA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	−0.087	−0.082	−0.192**	−0.209**	−0.262*	−0.265	−0.024	−0.132
	(0.065)	(0.063)	(0.083)	(0.097)	(0.136)	(0.172)	(0.161)	(0.268)
Performance			−0.075	−0.057	0.006	0.225	−0.232	−0.063
			(0.099)	(0.097)	(0.168)	(0.207)	(0.162)	(0.248)
Treatment × Performance			0.209*	0.241*	0.221	0.217	0.136	0.129
			(0.113)	(0.130)	(0.180)	(0.185)	(0.291)	(0.416)
Covariates	no	yes	no	yes	no	yes	no	yes
RI Pval (Low Performance)	[0.246]	[0.323]	[0.076]	[0.08]	[0.116]	[0.198]	[0.887]	[0.575]
ME (High Performance)			0.018	0.032	-0.04	-0.048	0.113	-0.003
SE (High Performance)			(0.088)	(0.091)	(0.13)	(0.146)	(0.171)	(0.177)
N	168	168	168	168	92	92	76	76
R^2	0.16	0.25	0.17	0.27	0.32	0.47	0.27	0.46

Table 3: **DV: Won again (alternative signal measure)**. OLS models in which an indicator of whether the incumbent won reelection in 2016 is regressed on the signal of incumbent performance (s). This signal is proxied by the 2011-2012 scorecard, which is further dichotomized ($s \in \{l,h\}$) using within-district median value. In columns 5-8 we split the sample by relative party advantage (PA), which is dichotomized using district median values. All models include district fixed effects; standard errors are clustered at the district level. * $p<.10$ ** $p<.05$ *** $p<.01$

Panel A: unconditional (full) sample

	Full				Low PA		High PA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	-0.049	-0.049	-0.120	-0.151^{**}	-0.230	-0.210	-0.072	-0.164
	(0.049)	(0.042)	(0.079)	(0.058)	(0.135)	(0.122)	(0.098)	(0.095)
Performance			0.010	-0.010	0.074	0.036	-0.130	-0.184
			(0.079)	(0.087)	(0.172)	(0.202)	(0.090)	(0.135)
Treatment × Performance			0.136	0.194	0.299	0.294	0.098	0.232
			(0.124)	(0.127)	(0.173)	(0.199)	(0.130)	(0.161)
Covariates	no	yes	no	yes	no	yes	no	yes
RI Pval (Low Performance)	[0.342]	[0.354]	[0.089]	[0.033]	[0.031]	[0.079]	[0.508]	[0.185]
ME (High Performance)			0.016	0.043	0.069	0.084	0.025	0.068
SE (High Performance)			(0.076)	(0.089)	(0.103)	(0.131)	(0.093)	(0.118)
N	354	354	354	354	135	135	159	159
R^2	0.07	0.14	0.08	0.15	0.18	0.31	0.20	0.33

Panel B: sample is conditional of winning party nomination

	Full				Low PA		High PA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	-0.087	-0.082	-0.250^{**}	-0.307^{***}	-0.438^{*}	-0.539^{**}	-0.141	-0.204
	(0.065)	(0.063)	(0.117)	(0.096)	(0.223)	(0.240)	(0.128)	(0.153)
Performance			-0.072	-0.105	0.032	-0.054	-0.105	-0.172
			(0.115)	(0.123)	(0.262)	(0.286)	(0.146)	(0.199)
Treatment × Performance			0.298	0.407^{**}	0.430	0.486	0.167	0.191
			(0.195)	(0.194)	(0.308)	(0.289)	(0.228)	(0.289)
Covariates	no	yes	no	yes	no	yes	no	yes
RI Pval (Low Performance)	[0.246]	[0.323]	[0.031]	[0.012]	[0.013]	[0.011]	[0.434]	[0.438]
ME (High Performance)			0.048	0.099	-0.008	-0.054	0.025	-0.013
SE (High Performance)			(0.111)	(0.127)	(0.136)	(0.172)	(0.173)	(0.234)
N	168	168	168	168	74	74	64	64
R^2	0.16	0.25	0.19	0.29	0.40	0.56	0.34	0.60

Table 4: **DV: Won again (alternative PA measure)**. OLS models in which an indicator of whether the incumbent won reelection in 2016 is regressed on the signal of incumbent performance (s). This signal is proxied by the 2012-2013 scorecard, which is further dichotomized ($s \in \{l,h\}$) using within-district median value. In columns 5-10 we split the sample by relative party advantage (PA), whereby low party advantage is defined below the 60th percentile, and high-party advantage is defined above the 40th percentile. All models include district fixed effects; standard errors are clustered at the district level. * $p < .10$ ** $p < .05$ *** $p < .01$

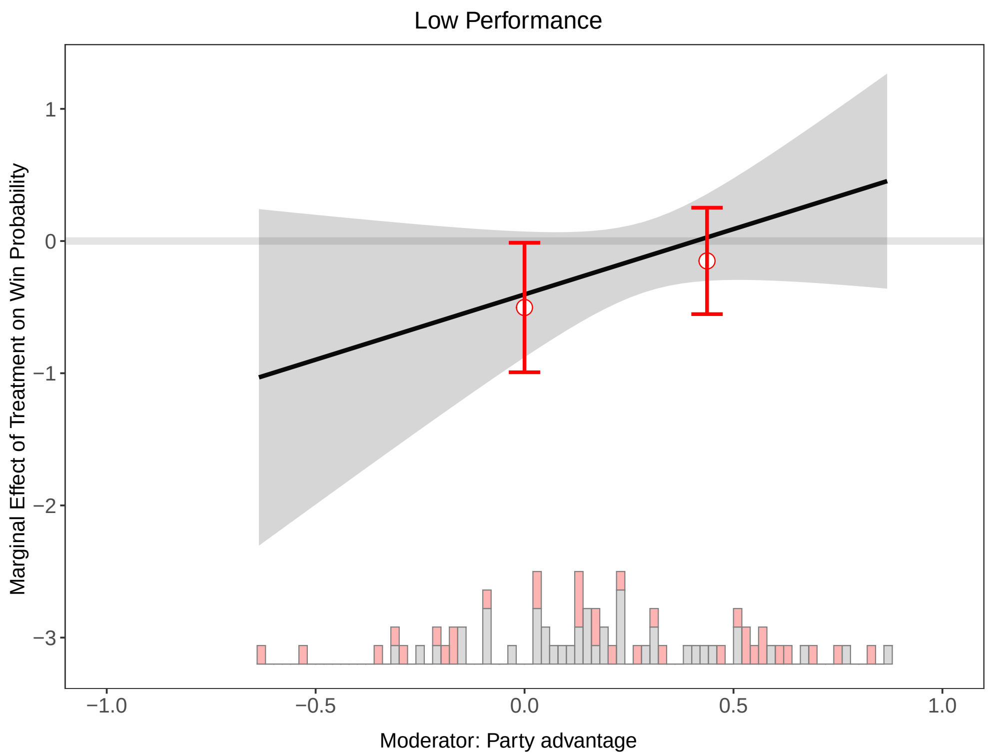

Figure 14: Interflex: Low Performance Signal

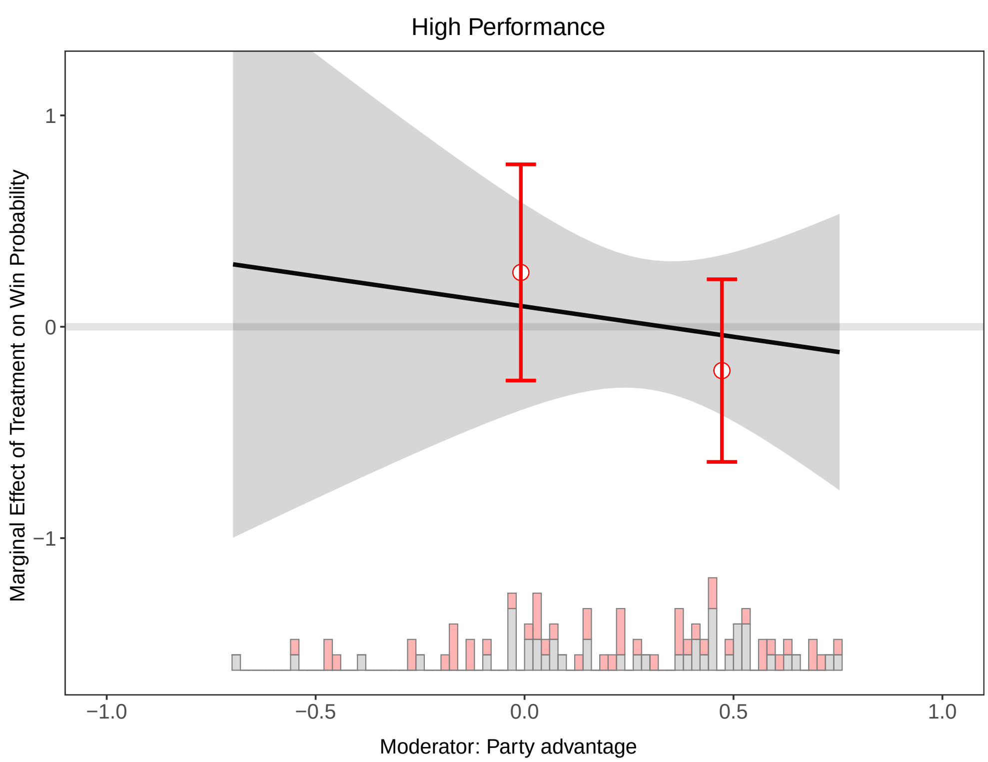

Figure 15: Interflex: High Performance Signal

	Remove independent				Low PA		High PA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	-0.035^{*}	-0.031	-0.060	-0.074^{*}	-0.106^{**}	-0.096^{**}	-0.032	-0.072
	(0.020)	(0.021)	(0.037)	(0.039)	(0.045)	(0.042)	(0.066)	(0.046)
Performance			0.001	-0.003	-0.023	-0.042	-0.071	-0.075
			(0.035)	(0.035)	(0.027)	(0.053)	(0.076)	(0.073)
Treatment × Performance			0.049	0.083	0.116	0.111	0.058	0.125^{*}
			(0.052)	(0.049)	(0.075)	(0.078)	(0.082)	(0.061)
Covariates	no	yes	no	yes	no	yes	no	yes
RI Pval (Low Performance)	[0.229]	[0.312]	[0.169]	[0.106]	[0.102]	[0.177]	[0.642]	[0.361]
ME (High Performance)			-0.011	0.009	0.01	0.015	0.026	0.053
SE (High Performance)			(0.028)	(0.025)	(0.058)	(0.056)	(0.061)	(0.061)
N	335	335	335	335	130	130	150	150
R^2	0.09	0.12	0.09	0.13	0.14	0.28	0.19	0.27

Table 5: **DV: Ran again (alternative PA measure)**. Table reports a series of OLS models in which an indicator of whether the incumbent reported running for reelection in 2016 is regressed on a binary proxy measure of the signal of incumbent performance (s), as defined in Table 2. In columns 5-8 we split the sample by relative party advantage (PA), whereby low party advantage is defined below the 60th percentile, and high-party advantage is defined above the 40th percentile. All models include district fixed effects; standard errors are clustered at the district level. * $p < .10$ ** $p < .05$ *** $p < .01$

H Proofs

An assessment is given by a pure strategy profile $\{e_I, r_I, d_L, q_I, r_i\}$ and a belief system $\{\mu_I(l), \mu_I(h)\}$, where $e_I(\theta) \in [0,1]$, $r_I(\mu_I) \in \{0,1\}$, $d_L(\mu_I, \mu_R, \zeta)$, $q_I(\mu_I, \mu_R, \varepsilon)$, $r_i(\mu_i, \mu_N, q_I\mu_I)$ and the beliefs μ_I(s) are derived from Bayes' rule.

Assumption 1. There exist thresholds $(\tau^\dagger, \sigma^\dagger, \bar{\varepsilon}^\dagger)$ such that (i) $\tau \le \tau^\dagger$, (ii) $\sigma \ge \sigma^\dagger$, (iii) $\bar{\varepsilon} \le \bar{\varepsilon}^\dagger$.

These assumptions are regularity conditions that ensure that non-linearities and indirect effects in equilibrium effort levels are not strong enough to affect comparative static results.

Lemma 1 *A potential challenger i runs if and only if her reputation exceeds both outsider and contestability hurdles, i.e., when*

$$\mu_i \ge \hat{\mu} \equiv \max\left\{F^{-1}\left(k^{\frac{1}{n-1}}\right), \mu_N, q_I\mu_I\right\}. \tag{E.1}$$

Proof. Let $P_i(\mu_i|r')$ denote i's winning probability when the other potential challengers follow the mixed strategy $\sigma'_r(\mu_j, \mu_N, q_I\mu_I) = \Pr(r_j = 1|\mu_i, \mu_N, q_I\mu_I)$. A potential challenger's payoff equals $P_i - k$. i's best reply to r' is to run if and only if $P_i \ge k$. We have:

$$\begin{aligned} P_i &= \Pr(\mu_i \ge \max\{\mu_N, q_I\mu_I, \max_{j\neq i}\{\mu_j r_j\}\}) \\ &= \mathbf{1}\{\mu_i \ge \max\{\mu_N, q_I\mu_I\}\}\Pr(\mu_i \ge \max_{j\neq i}\{\mu_j r_j\}) \\ &= \mathbf{1}\{\mu_i \ge \max\{\mu_N, q_I\mu_I\}\}P_i^\dagger(\mu_i|\sigma'_r), \end{aligned}$$

where

$$P_i^\dagger(\mu_i|\sigma'_r) = \left(F(\mu_i) + \int_{\mu_i}^1 [1 - \sigma'_r(z, \mu_N, q_I\mu_I)]dF(z)\right)^{n-1}.$$

Individual rationality implies that $\sigma'_r(0, \mu_N, q_I\mu_I) = 0$ and $\sigma'_r(1, \mu_N, q_I\mu_I) = 1$. As a result, $P_i^\dagger(\mu_i|\sigma'_r)$ must be nondecreasing in μ_i. Suppose that in equilibrium there exist an interval $[\underline{\mu}^\dagger, \overline{\mu}^\dagger]$ in which $\sigma'_r(\mu, \mu_N, q_I\mu_I) \in (0,1)$. That implies an indifference condition of the form i $P_i^\dagger(\mu_i|\sigma'_r) = k = P_i^\dagger(\mu_i|\sigma'_r)$, that is

$$F(\underline{\mu}^\dagger) + \int_{\underline{\mu}^\dagger}^{\overline{\mu}^\dagger} [1 - \sigma'_r(z, \mu_N, q_I\mu_I)]dF(z) = F(\overline{\mu}^\dagger),$$

which contradicts the initial assumption that $\sigma'_r \in (0,1)$. Since $P_i^\dagger$ is increasing in μ_i, in equilibrium σ'_r must take a threshold form $\sigma'_r = \mathbf{1}\{\mu_i \ge \mu'\}$, we must have

$$P_i^\dagger(\mu_i|\mu') = F^{n-1}(\mu')\mathbf{1}\{\mu_i \le \mu'\} + F^{n-1}(\mu_i)\mathbf{1}\{\mu_i \ge \mu'\}.$$

To be compatible with equilibrium, must then have $\mathbf{1}\{\mu' \ge \max\{\mu_N, q_I\mu_I\}\}P_i^\dagger(\mu'|\mu') = k$, whose only solution yields $\mu' = \hat{\mu}$. ■

Lemma H1 *An incumbent who has been de-selected steps down if and only $\mu_I < \mu_R$ and he is not visibility-motivated: $\varepsilon > 0$: $q_I(\mu_I, \mu_R, \varepsilon) = 1 - \mathbf{1}\{\mu_I < \mu_R\}\mathbf{1}\{\varepsilon > 0\}$.*

Proof. If an incumbent who has been de-selected stays out, her payoff will be $-k$. If instead she runs as an independent, her payoff is $\mathbf{1}\{\mu_I \ge \mu_R\}P_I(\mu_I) - \varepsilon - k$, where

$$\begin{aligned} P_I(\mu_I) &= \Pr(\mu_I \ge \max_i\{\mu_i r_i\}) \\ &= F^n(\mu_I)\mathbf{1}\left\{\mu_I \ge F^{-1}\left(k^{\frac{1}{n-1}}\right)\right\} + k^{\frac{n}{n-1}}\mathbf{1}\left\{\mu_I < F^{-1}\left(k^{\frac{1}{n-1}}\right)\right\} \end{aligned} \tag{E.2}$$

Hence, when $\varepsilon < 0$, I always runs. When instead $\varepsilon > 0$, I only runs when (i) $\mu_I \ge \mu_R$ and (ii) $P_I(\mu_I) \ge \varepsilon$, which is always true provided that $\bar{\varepsilon}$ is small enough relative to k (specifically, whenever $\bar{\varepsilon} < k^{\frac{n}{n-1}}$). ■

Lemma 2 *The party leader replaces the incumbent if either he is biased against her ($\zeta = -1$), or if he is unbiased and the replacement candidate has a higher reputation ($\zeta = 0$ and $\mu_I > \mu_R$): $d_L(\mu_I, \mu_R, \zeta) = \mathbf{1}\{\zeta = 1\} + \mathbf{1}\{\zeta = 0\}\mathbf{1}\{\mu_I \ge$*

$\mu_R\}$.

Proof. The leader's payoff from nominating the incumbent equals $P_I(\mu_I)+\zeta$ and his payoff from nominating the incumbent equals $P_I(\mu_R)\mathbf{1}\{\mu_I<\mu_R\}+\zeta$. The result follows from the fact that $P_I(\cdot)$ is nondecreasing and that $\zeta\in\{-1,0,1\}$. ■

Lemma 3 *There exists $\mu^*\in(0,1)$ such that the incumbent runs for reelection if and only if $\mu_I\geq\mu^*$.*

Proof. In light of Lemmas 2 and H1, the expected payoff of an incumbent with reputation μ_I running for reelection equals

$$\begin{aligned}U_I(\mu_I)&=\Pr(I=N\vee\mu_I\geq\mu_R)[P_I(\mu_I)+\mathbf{E}\{\varepsilon\}]+\Pr(R=N\wedge\mu_I<\mu_R)\mathbf{E}\{\varepsilon|\varepsilon>0\}\\&=[\chi_1+(1-\chi_1)F_R(\mu_I)]P_I(\mu_I)+(1-\chi_1)(1-F_R(\mu_I))\mathbf{E}\{\varepsilon|\varepsilon>0\}\end{aligned}$$

The incumbent runs whenever $U_I(\mu_I)-k\geq 0$. To complete the proof, we show that when $\bar{\varepsilon}$ is small enough, $U_I(\mu_I)-k$ has a unique root in the unit interval. To see that, notice that, using the definition of $PI(\cdot)$ in equation E.2,

$$\lim_{\bar{\varepsilon}\to 0}U_I=[\chi_1+(1-\chi_1)F_R(\mu_I)]\left[F^n(\mu_I)\mathbf{1}\left\{\mu_I\geq F^{-1}\left(k^{\frac{1}{n-1}}\right)\right\}+k^{\frac{n}{n-1}}\mathbf{1}\left\{\mu_I<F^{-1}\left(k^{\frac{1}{n-1}}\right)\right\}\right]$$

Notice that (i) the expression is continuous and strictly increasing in μ_I. Moreover, we have that $\lim_{\bar{\varepsilon}\to 0}U_I\left(F^{-1}\left(k^{\frac{1}{n-1}}\right)\right)<k^{\frac{n}{n-1}}<k$ and $\lim_{\bar{\varepsilon}\to 0}U_I(1)=1$. Hence, there exist a unique $\mu^*\in\left(F^{-1}\left(k^{\frac{1}{n-1}}\right),1\right)$.
■

Let V_{s} denote the Incumbent's equilibrium value after observing signal s:

$$V_{\mathsf{s}}=\max\{U_I(\mu_I),0\}$$

.

Before moving to Lemma 4, we prove two technical lemmas.

Lemma H2 *Let $e(\theta)$ denote type θ's equilibrium level of effort.*
(i) In equilibrium, $e(1)=2^{\frac{1}{\gamma}}e(0)$;
(ii) the posterior ability conditional high performance as a function of effort (where $e=e(0)$) equals

$$\mu_h(e;\mu_0)\equiv\frac{\mu_0(1-\tau+2^{\frac{1+\gamma}{\gamma}}\tau e)}{\mu_0(1-\tau+2^{\frac{1+\gamma}{\gamma}}\tau e)+(1-\mu_0)(1-\tau+\tau e)}\tag{E.3}$$

is increasing in μ_0, τ, and e;
(iii) the posterior ability conditional high performance as a function of effort (where $e=e(0)$) equals

$$\mu_l(e;\mu_0)\equiv\frac{\mu_0(1+\tau-2^{\frac{1+\gamma}{\gamma}}\tau e)}{\mu_0(1+\tau-2^{\frac{1+\gamma}{\gamma}}\tau e)+(1-\mu_0)(1+\tau-\tau e)}\tag{E.4}$$

is increasing in μ_0 and decreasing in e and τ.

Proof. (i) Notice that

$$\Pr(\mathsf{s}=h\,|\,e(\theta),\theta)=\frac{1+\theta}{2}e(\theta)\frac{1+\tau}{2}+\left(1-\frac{1+\theta}{2}e(\theta)\right)\frac{1-\tau}{2}=\frac{1-\tau}{2}+\frac{1+\theta}{2}e(\theta)\tau.\tag{E.5}$$

The expected payoff of a type-θ incumbent as a function of effort e equals

$$\begin{aligned}&Pr(\mathsf{s}=h\,|\,e,\theta)V_h+Pr(\mathsf{s}=l\,|\,e,\theta)V_l-C(e)\\&=\frac{1-\tau+e\tau(1+\theta)}{2}[V_h-V_l]+V_l-\frac{e^{1+\gamma}}{1+\gamma}.\end{aligned}$$

Notice that $\tau\in(0,1)$ and $V_{\mathsf{s}}\in(0,1-k)$. Hence, for each type optimal effort is interior and solves (recall that I takes voter beliefs as given)

$$C'(e(\theta))=\tau\frac{1+\theta}{2}[V_h-V_l]$$

As a result, we must have, $C'(e(1))=2C'(e(1))$ which implies $\frac{e(1)}{e(0)}=2^{\frac{1}{\gamma}}$.

(ii) Notice that since

$$\mu_I(h) = \frac{\mu_0 \Pr(\mathsf{s}=h\,|\,e(1),1)}{\mu_0 \Pr(\mathsf{s}=h\,|\,e(1),1) + (1-\mu_0)\Pr(\mathsf{s}=h\,|\,e(0),0)}$$

expression (E.3) follows from (E.5). Tedious but straightforward computations yield:

$$\frac{d\mu_I(h)}{d\mu_0} = (1-\tau+e\tau)\frac{1-\tau+e\tau 2^{\frac{1+\gamma}{\gamma}}}{(1-\tau+e\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0))^2} > 0$$

$$\frac{d\mu_I(h)}{d\tau} = \frac{(2^{\frac{1+\gamma}{\gamma}}-1)e\mu_0(1-\mu_0)}{(1-\tau+e\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0))^2} > 0$$

$$\frac{d\mu_I(h)}{de} = \frac{(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0(1-\mu_0)\tau(1-\tau)}{(1-\tau+e\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0))^2} > 0.$$

(iii) Notice that since

$$\mu_I(l) = \frac{\mu_0 \Pr(\mathsf{s}=l\,|\,e(1),1)}{\mu_0 \Pr(\mathsf{s}=l\,|\,e(1),1) + (1-\mu_0)\Pr(\mathsf{s}=l\,|\,e(0),0)}$$

expression (E.4) follows from (E.5). Tedious but straightforward computations yield:

$$\frac{d\mu_I(l)}{d\mu_0} = (1+\tau-e\tau)\frac{1+\tau-2^{\frac{1+\gamma}{\gamma}}e\tau}{(1+\tau-e\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0))^2} > 0$$

$$\frac{d\mu_I(l)}{d\tau} = \frac{-(2^{\frac{1+\gamma}{\gamma}}-1)e\mu_0(1-\mu_0)}{(1+\tau-e\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0))^2} < 0$$

$$\frac{d\mu_I(l)}{de} = \frac{-(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0(1-\mu_0)\tau(1+\tau)}{(1+\tau-e\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0))^2} < 0.$$

That $\frac{d\mu_I(l)}{d\mu_0} > 0$ follows from $e < (\frac{\tau}{2})^{\frac{1}{\gamma}}$, which implies $1+\tau-2^{\frac{1+\gamma}{\gamma}}e\tau > 1+\tau-2\tau^{\frac{1+\gamma}{\gamma}} > 0$. ■

Lemma H3 *As the variance σ approaches infinity, the distributions F and R_R approach the uniform distribution:*

$$\lim_{\sigma\to\infty} F_R(x) = \lim_{\sigma\to\infty} F(x) = x$$

Proof. The result follows from the fact that the cdf of a truncated normal with parameters (μ,σ) and support in the unit interval equals $\left[\Phi\left(\frac{x-\mu}{\sigma}\right)-\Phi\left(\frac{-\mu}{\sigma}\right)\right]\left[\Phi\left(\frac{1-\mu}{\sigma}\right)-\Phi\left(\frac{-\mu}{\sigma}\right)\right]^{-1}$ and

$$\lim_{\sigma\to\infty}\left[\Phi\left(\frac{x-\mu}{\sigma}\right)-\Phi\left(\frac{-\mu}{\sigma}\right)\right]\left[\Phi\left(\frac{1-\mu}{\sigma}\right)-\Phi\left(\frac{-\mu}{\sigma}\right)\right]^{-1} = \lim_{\sigma\to\infty}\frac{-(x-\mu)+(-\mu)}{-(1-\mu)+(-\mu)} = x$$

This completes the proof. ■

Lemma 4 *There exist thresholds $\underline{\mu},\overline{\mu}$ for relative party advantage such that an incumbent*
(i) never runs for reelection when $\mu_0 < \underline{\mu}$;
(ii) runs for reelection only after a positive performance signal when $\mu_0 \in [\underline{\mu},\overline{\mu}]$;
(iii) always runs for reelection when $\mu_0 > \overline{\mu}$.

Proof of Lemma 4. Since in every equilibrium $e(1) = 2e(0)$ and Lemmas 1-3 and H1 uniquely characterize the choices (r_i, q_I, d_L, r_I), the set of equilibria can be derived from the set of roots (we select the largest) of the mapping $\mathcal{H}: [0,1/2] \to [-2\tau^{-1}, 1-k]$

$$\mathcal{H}(e;\sigma,\varepsilon) = V_h(e) - V_l(e) - \frac{2}{\tau}e^\gamma$$

where $e = e(0)$ and $V_{\mathsf{s}}(e) = \max\{U_I(\mu_{\mathsf{s}}(e)), 0\}$. First, notice that $\mathcal{H}$ is continuous and, since $\mu_h(0) = \mu_l(0) = \mu_0$, $\mathcal{H}(0) = 0$. Moreover, $\mathcal{H}(1) < 1-k-\frac{2}{\tau} < 0$. This implies that $\mathcal{H}$ (i) has at least one root in the unit interval and (ii) is decreasing when computed at the largest of these roots. To construct $\underline{\mu}(\tau)$ and $\overline{\mu}(\tau)$, we establish a series of properties of the mapping $\mathcal{H}(e;\infty,0)$ (see below). Continuity allows us to argue that when ε is small enough and σ is large enough, these properties extend to $H(e;\sigma,\varepsilon)$.

Step 1 characterizes an ancillary mapping $\underline{\mathcal{H}}(e)$ and shows that there exists $\underline{\mu}<\mu^*$ such that its largest root exists for all $\mu_0\in[\underline{\mu},1]$ and is increasing in μ_0. Step 2 shows that there exists $\overline{\mu}>\mu^*>\underline{\mu}$ such that the largest root of $\underline{\mathcal{H}}(e)$ coincides with the largest root of $\mathcal{H}(e;\infty,0)$ whenever $\mu_0\in[\underline{\mu},\overline{\mu}]$. Step 3 characterizes an ancillary mapping $\overline{\mathcal{H}}(e)$ and shows that the largest root of $\overline{\mathcal{H}}(e)$ coincides with the largest root of $\mathcal{H}(e;\infty,0)$ whenever $\mu_0\in[\overline{\mu},1]$. Step 4 shows that when $\mu_0\in(0,\underline{\mu})$ the only root of $\mathcal{H}(e,\infty,0)$ is zero.

Step 1. By Lemma H3, we have that $\mathcal{H}(e;\infty,0)$ equals

$$\max\{0,[\chi_1+(1-\chi_1)\mu_h(e)]\mu_h^n(e)-k\}-\max\{0,[\chi_1+(1-\chi_1)\mu_l(e)]\mu_l^n(e)-k\}-\frac{2}{\tau}e^\gamma. \tag{E.6}$$

Now, define the ancillary mapping

$$\underline{\mathcal{H}}(e,\mu_0)=[\chi_1+(1-\chi_1)\mu_h(e)]\mu_h^n(e)-k-\frac{2}{\tau}e^\gamma.$$

Let $\underline{e}(\mu_0)$ denote its largest root in the unit interval. Notice that (i) $\underline{\mathcal{H}}(0,\mu_0)=[\chi_1+(1-\chi_1)\mu_0]\mu_0^n-k$ and (ii)

$$\frac{\partial}{\partial e}\underline{\mathcal{H}}(e,\mu_0)=\frac{\partial\mu_h}{\partial e}[n\chi_1\mu_h^{n-1}+(n+1)(1-\chi_1)\mu_h^n]-\gamma\frac{2}{\tau}e^{\gamma-1}$$
$$\Rightarrow\frac{\partial}{\partial e}\underline{\mathcal{H}}(0,\mu_0)=(2^{\frac{1+\gamma}{\gamma}}-1)\frac{\mu_0(1-\mu_0)\tau}{1-\tau}[n\chi_1\mu_0^{n-1}+(n+1)(1-\chi_1)\mu_0^n]>0.$$

Since, by definition of μ^*, $\underline{\mathcal{H}}(0,\mu^*)-k=0$, we must have that $\underline{e}(\mu^*)>0$. Moreover, since

$$\frac{\partial}{\partial\mu_0}\underline{\mathcal{H}}(e,\mu_0)=\frac{\partial\mu_h}{\partial\mu_0}[n\chi_1\mu_h^{n-1}+(n+1)(1-\chi_1)\mu_h^n]>0,$$

The implicit function theorem implies that, when it exists, $\underline{e}(\mu_0)$ is increasing in μ_0. Since, in addition, $\lim_{\mu_0\to0}\underline{\mathcal{H}}(e,\mu^*)=-k-\frac{2}{\tau}e^\gamma<0$, there is a threshold $\underline{\mu}\in(0,\mu^*)$ such that $\underline{e}$ is defined whenever $\mu_0\in[\underline{\mu},1]$.

Step 2. We now show that there exists $\overline{\mu}>\mu^*>\underline{\mu}$ such that $\mu^*\geq\mu_l(\underline{e}(\mu_0);\mu_0)$ if and only if $\mu_0\in[\underline{\mu},\overline{\mu}]$. From Step 1, notice that $\mu_l(\underline{e}(\mu^*);\mu^*)<\mu^*$. Moreover, $\lim_{\mu_0\to1}\mu_l(\underline{e}(\mu_0);\mu_0)=1$, which implies that $\overline{\mu}$ exists. To show uniqueness, notice that

$$\frac{d\mu_l(\underline{e}(\mu_0);\mu_0)}{d\mu_0}=\frac{\partial\mu_l(\underline{e}(\mu_0);\mu_0)}{\partial\mu_0}+\frac{\partial\mu_l(\underline{e}(\mu_0);\mu_0)}{\partial e}\frac{\partial\underline{e}(\mu_0)}{\partial\mu_0}$$
$$\xrightarrow[\tau\to0]{}\left.\frac{\partial\mu_l(\underline{e}(\mu_0);\mu_0)}{\partial\mu_0}\right|_{\tau=0}=1>0$$

where the second line follows from the proof of Lemma H2 (specifically, the fact that $\left.\frac{\partial\mu_l(\underline{e}(\mu_0);\mu_0)}{\partial e}\right|_{\tau=0}=0$). This implies that when τ is not too large, $\mu_l(\underline{e}(\mu_0);\mu_0)$ is increasing in μ_0, and so the expression $\mu_l(\underline{e}(\mu_0);\mu_0)-\mu^*$ has a unique root.

Step 3. Steps 1 and 2 imply that, whenever $\mu_0\in[\underline{\mu},\overline{\mu}]$, $\underline{\mathcal{H}}(e)=\mathcal{H}(e;\infty,0)$ and $\underline{e}$ is the optimal equilibrium effort. We now show that when $\mu_0>\overline{\mu}$, the optimal equilibrium effort coincides with $\overline{e}$, the largest root of the mapping

$$\overline{\mathcal{H}}(e,\mu_0)=[\chi_1+(1-\chi_1)\mu_h(e)]\mu_h^n(e)-[\chi_1+(1-\chi_1)\mu_l(e)]\mu_l^n(e)-\frac{2}{\tau}e^\gamma.$$

Notice that $\underline{e}(\overline{\mu})$ is, by definition, a root of $\overline{\mathcal{H}}(e,\overline{\mu})$. Moreover,

$$\frac{\partial}{\partial e}\overline{\mathcal{H}}(\underline{e}(\overline{\mu}),\overline{\mu})=\begin{bmatrix}\frac{\partial\mu_h}{\partial e}[n\chi_1\mu_h^{n-1}+(n+1)(1-\chi_1)\mu_h^n]\\-\frac{\partial\mu_l}{\partial e}[n\chi_1\mu_h^{n-1}+(n+1)(1-\chi_1)\mu_l^n]\end{bmatrix}-\gamma\frac{2}{\tau}\underline{e}^{\gamma-1}(\overline{\mu})$$
$$\xrightarrow[\tau\to0]{}-\gamma\frac{2}{\tau}\underline{e}^{\gamma-1}(\overline{\mu})<0,$$

which implies that when τ is small enough, $\underline{e}(\overline{\mu})$ is also the largest root of $\overline{\mathcal{H}}(e,\overline{\mu})$ and thus $\underline{e}(\overline{\mu})=\overline{e}(\overline{\mu})$. To show that whenever $\mu_0\geq\overline{\mu}$, $\overline{e}(\mu_0)$ is defined and $\overline{\mathcal{H}}(e,\mu_0)=\mathcal{H}(e:\infty,0)$ provided that τ is small enough, notice that by the same argument of Step 2, $\frac{d\mu_l(\overline{e}(\mu_0);\mu_0)}{d\mu_0}\xrightarrow[\tau\to0]{}\left.\frac{\partial\mu_l(\overline{e}(\mu_0);\mu_0)}{\partial\mu_0}\right|_{\tau=0}=1>0.$

Step 4. Whenever $\mu_0<\underline{\mu}$, (i) $\max_{e\in[0,2^{-\gamma}]}\underline{\mathcal{H}}(e,\mu_0)<0$, which immediately implies that $\underline{\mathcal{H}}(e,\mu_0)\neq\mathcal{H}(e;\infty,0))$. Moreover, $\underline{\mu}<\mu^*$ implies that for all $e\in[0,2^{-\gamma}]$ $k>[\chi_1-(1-\chi_1)\mu_l(e)]\mu_l^n(e)$, which in turns implies that $\overline{\mathcal{H}}(e,\mu_0)\neq\mathcal{H}(e;\infty,0))$. Hence, when $\mu_0<\underline{\mu}$, $\mathcal{H}(e;\infty,0))=-\frac{2}{\tau}e^\gamma$, whose unique root is zero. ∎

Lemma H4 *When k is large enough, equilibrium effort is strictly quasiconcave with a peak at $\mu_0 = \overline{\mu}$.*

Proof. Lemma 4 implies that
$$e(\theta) = 2^{\theta}\gamma\underline{e}(\mu_0)\mathbf{1}\{\mu_0 \in [\underline{\mu},\overline{\mu}]\} + 2^{\theta}\gamma\overline{e}(\mu_0)\mathbf{1}\{\mu_0 \in [\overline{\mu},1]\}$$
By Step 1 of the proof of Lemma 4, $\underline{e}(\mu_0)$ is strictly increasing. So, we only need to show that when n is large enough, $\overline{e}(\mu_0)$ is decreasing in $[\overline{\mu},1]$. To see this, observe that by definition, $\frac{\partial}{\partial e}\overline{\mathcal{H}}(\overline{e}(\mu_0),\mu_0) < 0$. Hence, by the Implicit Function Theorem we just need to show that when k is large enough, $\frac{\partial}{\partial \mu_0}\overline{\mathcal{H}}(\overline{e}(\mu_0),\mu_0) < 0$. Notice that, using the fact that $\frac{\partial \mu_s}{\partial \mu_0} = \frac{1-\mu_s}{1-\mu_0}\frac{\mu_s}{\mu_0}$, we have that $\frac{\partial}{\partial \mu_0}\overline{\mathcal{H}}(\overline{e}(\mu_0),\mu_0)$ equals
$$\frac{(1-\chi_1)(n+1)^2}{(1-\mu_0)\mu_0}\left[(1-\mu_h)\mu_h^{n+1} - (1-\mu_l)\mu_l^{n+1}\right] + \frac{\chi_1 n^2}{(1-\mu_0)\mu_0}[(1-\mu_h)\mu_h^n - (1-\mu_l)\mu_l^n].$$
To complete the proof, we observe that whenever $\mu_l \geq \frac{n+1}{n+2}$, both terms in the above expression are negative. Since, by construction, $\mu_l(\overline{e}(\mu_0),\mu_0) > k^{\frac{1}{n}}$ when $\mu_0 \in [\overline{\mu},1]$, whenever $k > \left(\frac{n+1}{n+2}\right)^n$, $\frac{\partial}{\partial \mu_0}\overline{\mathcal{H}}(\overline{e}(\mu_0),\mu_0) < 0$. ■

Lemma H5 *$\underline{e}$ and $\overline{e}$ are both strictly increasing in τ.*

Proof. Follows from observing that in the respective domains $\frac{\partial}{\partial e}\underline{\mathcal{H}}(\underline{e}(\mu_0),\mu_0) < 0$ and $\frac{\partial}{\partial e}\overline{\mathcal{H}}(\overline{e}(\mu_0),\mu_0) < 0$ and that, since by Lemma H2 $\mu_h(e)$ increases in τ and $\mu_l(e)$ decreases in τ, we have $\frac{\partial}{\partial \tau}\underline{\mathcal{H}}(\underline{e}(\mu_0),\mu_0) > 0$ and $\frac{\partial}{\partial \tau}\overline{\mathcal{H}}(\overline{e}(\mu_0),\mu_0) > 0$. ■

Proposition 2 *$\underline{\mu}$ decreases in transparency and $\overline{\mu}$ increases in transparency.*

Proof. (i) $\underline{\mu}$ is implicitly defined by the condition $\mu_h(\underline{e}(\mu_0),\mu_0) = \mu^*$. By the implicit function theorem, we have that
$$\frac{\partial \underline{\mu}}{\partial \tau} = -\frac{d\mu_h(\underline{e}(\mu_0),\mu_0)}{d\tau}\left(\frac{d\mu_h(\underline{e}(\mu_0),\mu_0)}{d\mu_0}\right)^{-1} < 0$$
since, by the analysis in the proof of Lemma 4 (Step 1), $\frac{d\mu_h(\underline{e}(\mu_0),\mu_0)}{d\mu_0} > 0$ and, by Lemmas H3 and H5
$$\frac{d\mu_h(\underline{e}(\mu_0),\mu_0)}{d\tau} = \frac{\partial \mu_h(\underline{e}(\mu_0),\mu_0)}{\partial e}\frac{\partial \underline{e}(\mu_0)}{\partial \tau} + \frac{\partial \mu_h(\underline{e}(\mu_0),\mu_0)}{\partial \tau} > 0.$$
(ii) $\overline{\mu}$ is implicitly defined by the condition $\mu_l(\underline{e}(\mu_0),\mu_0) = \mu^*$. By the implicit function theorem, we have that
$$\frac{\partial \overline{\mu}}{\partial \tau} = -\frac{d\mu_l(\underline{e}(\mu_0),\mu_0)}{d\tau}\left(\frac{d\mu_l(\underline{e}(\mu_0),\mu_0)}{d\mu_0}\right)^{-1} > 0$$
since, by the analysis in the proof of Lemma 4 (Step 2), $\frac{d\mu_l(\underline{e}(\mu_0),\mu_0)}{d\mu_0} > 0$ and, by Lemmas H3 and H5,
$$\frac{d\mu_l(\underline{e}(\mu_0),\mu_0)}{d\tau} = \frac{\partial \mu_l(\underline{e}(\mu_0),\mu_0)}{\partial e}\frac{\partial \underline{e}(\mu_0)}{\partial \tau} + \frac{\partial \mu_l(\underline{e}(\mu_0),\mu_0)}{\partial \tau} < 0$$
This completes the proof. ■

Proposition 1 *An increase in transparency*
(i) increases incumbent effort for all abilities and costs of running
(ii) increases the incumbent's reputation conditional on a high performance signal $\mu_I(h)$
(iii) decreases the incumbent's reputation conditional on a low performance signal $\mu_I(l)$.

Proof. (i) Equilibrium effort equals zero when $\mu < \underline{\mu}$, it equals $\underline{e}(\mu_0)$ in $[\underline{\mu},\overline{\mu}]$ and it equals $\overline{e}(\mu_0)$ in $[\overline{\mu},1]$. Lemma H5 implies that $\underline{e}(\mu_0)$ and $\overline{e}(\mu_0)$ are increasing in τ. Combining these two results yields the claim. (ii) Follows directly form part (i) and the fact that μ_h is increasing in both e and τ. (iii) Follows directly form part (i) and the fact that μ_l is decreasing in both e and τ. ■

H.1 An alternative timeline

Suppose that potential challengers make their entry decision after the realization of s—coherently with our definition of sustained transparency—, but before the incumbent's running decision. We illustrate that the model's implications remains unchanged under this alternative timeline in a simplified setting with no visibility-motivated incumbents ($\varepsilon = 0$ with probability one) and unbiased party leader ($\chi_0 = 1$).[3]

Let $\mu^C = \max_i \mu_i r_i$ denote the highest reputation challenger. Under the modified timeline, all choices are contingent on μ^C. We now proceed by backward induction.

- A deselected incumbent wins the general election if $\mu_I \geq \max\{\mu_R, \mu^C\}$, a nominated incumbent wins the general election if $\mu_I \geq \mu^C$;
- The party leader always selects the candidate with the highest reputation (whenever $\mu^C > \max\{\mu_I, \mu_R\}$, any nomination strategy is individually rational, but also outcome irrelevant);
- The incumbent runs whenever $\mu_I \geq \mu^* \equiv \max\left\{\mu^C, F^{-1}(k)\right\}$.

We now characterize the unique symmetric threshold $\hat{\mu}$ above which a challenger runs. Notice that if i runs, she wins the general election if (A) $\mu_i \geq \max_{j \neq i} r_j \mu_j$ and (B) $\mu_i > \max\{\mu_I \mathbf{1}\{\mu_I > \mu^*\}, \mu_R\}$. Assuming all other challengers play the same strategy, the winning probability of i when $\mu_i = \hat{\mu}$ equals

$$P_i(\hat{\mu}) = \begin{cases} F^{n-1}(\hat{\mu})\mathbf{1}\{\hat{\mu} > \mu_I\}F_R(\hat{\mu}) & \hat{\mu} > F^{-1}(k) \\ F^{n-1}(\hat{\mu})\mathbf{1}\{\mu_I < F^{-1}(k)\}F_R(\hat{\mu}) & \hat{\mu} \leq F^{-1}(k) \end{cases}$$

Since $\hat{\mu} \leq F^{-1}(k)$ implies $P_i(\hat{\mu}) < k^{n-1} < k$, we must have $\hat{\mu} > F^{-1}(k)$. Specifically, we have $\hat{\mu} = \max\{\mu_I, \mu^+\}$, where μ^+ denotes the unique root of $F^{n-1}(x)F_R(x) - k$. As a consequence, the number of general election challengers will respond to changes in μ_I only when $\mu_I > \mu^+$, which requires μ_0 to be large enough.

The ex-ante winning probability of I is then

$$F_R(\mu_I)\left(F^n(\mu_I)\mathbf{1}\{\mu_I \geq \mu^+\} + F^n(\mu^+)\mathbf{1}\{\mu_I \geq \mu^+\}\right)$$

which is very similar (and qualitatively equivalent) to the expression of $U_I(\mu_I)$ in the proof of Lemma 3.

H.2 Does transparency benefit the local party leader?

Since we test our theory in the context of an electoral autocracy, it is natural to ask whether how an increase in transparency would affect the ability of the incumbent's party to hold the seat, which is equivalent to the ex-ante expected utility of an unbiased party leader ($\zeta = 0$), denoted by U_L. We obtain

$$U_L = \begin{cases} Q_R\left(F^{-1}\left(k^{\frac{1}{n-1}}\right)\right) & \mu_0 < \underline{\mu} \\ (1 - \Pr(\mathsf{s} = h))Q_R\left(F^{-1}\left(k^{\frac{1}{n-1}}\right)\right) + \Pr(\mathsf{s} = h)Q_R(\mu_I(h)) & \mu_0 \in [\underline{\mu}, \overline{\mu}] \\ (1 - \Pr(\mathsf{s} = h))Q_R(\mu_I(l)) + \Pr(\mathsf{s} = h)Q_R(\mu_I(h)) & \mu_0 \geq \overline{\mu} \end{cases}$$

where $Q_R(x) \equiv \int_0^x F^n(x)dF_R(z) + \int_x^1 F^n(z)dF_R(z)$.

Proposition 1 *U_L is constant in τ if $\mu_0 < \underline{\mu}$, and strictly increasing in τ if $\mu_0 \in [\underline{\mu}, \overline{\mu})$ and effort is sufficiently elastic to transparency.*

Proof. First, notice that since (i) Q_R is strictly increasing, (ii) using the proof of Lemma 4, $\mu_0 \geq \underline{\mu} \Rightarrow \mu_I(h) > F^{-1}\left(k^{\frac{1}{n}}\right) > F^{-1}\left(k^{\frac{1}{n-1}}\right)$, and (iii) $\mu_I(l) < \mu_I(h)$, U_L is strictly increasing in $\Pr(\mathsf{s} = h)$. Differentiating U_L

[3] It's easy to verify that our results are qualitatively unaffected by these two assumptions.

yields

$$\frac{dU_L}{d\tau} = \begin{cases} 0 & \mu_0 < \underline{\mu} \\ \frac{d\Pr(\mathsf{s}=h)}{d\tau}\Big[Q_R(\mu_I(h)) - Q_R\Big(F^{-1}\Big(k^{\frac{1}{n-1}}\Big)\Big)\Big] + \Pr(\mathsf{s}=h)Q'_R(\mu_I(h))\frac{d\mu_I(h)}{d\tau} & \mu_0 \in [\underline{\mu}, \overline{\mu}) \\ \frac{d\Pr(\mathsf{s}=h)}{d\tau}[Q_R(\mu_I(h)) - Q_R(\mu_I(l))] + \Pr(\mathsf{s}=h)Q'_R(\mu_I(h))\frac{d\mu_I(h)}{d\tau} & \\ \qquad + (1-\Pr(\mathsf{s}=h))Q'_R(\mu_I(l))\frac{d\mu_I(l)}{d\tau} & \mu_0 \geq \overline{\mu} \end{cases},$$

where $\Pr(\mathsf{s}=h) = \frac{1-\tau+e(0)\tau(1+(2^{\frac{1+\gamma}{\gamma}}-1)\mu_0)}{2}$.

By Proposition 1, $\frac{d\mu_I(h)}{d\tau} > 0$. Hence, to prove the claim it is sufficient to show that under the assumptions $\frac{d\Pr(\mathsf{s}=h)}{d\tau}$ is close enough to zero. We obtain

$$\frac{d\Pr(\mathsf{s}=h)}{d\tau} = \frac{\underline{e}[1-\mu_0+\mu_0 2^{\frac{1+\gamma}{\gamma}}](1+\eta(\underline{e},\tau))-1}{2},$$

where $\eta(\underline{e},\tau)$ is the elasticity of effort to transparency.

$$\eta(\underline{e},\tau) = \frac{d\underline{e}}{d\tau}\frac{\tau}{\underline{e}} = \frac{2\underline{e}^{\gamma} + \tau^2 \frac{2\mu_I(h)}{n+1}\frac{\partial\mu_h}{\partial\tau}}{\gamma 2\underline{e}^{\gamma} - \tau^2\frac{2\mu_I(h)}{n+1}\frac{\partial\mu_h}{\partial\tau}(1-\tau)}$$

and the last equiality follows from applying the implicit function theorem to the mapping $\underline{\mathcal{H}}$ defined in E.6 and using the fact that $\frac{\partial\mu_h}{\partial\underline{e}}(1-\tau) = \frac{\partial\mu_h}{\partial\tau}\frac{\underline{e}}{\tau}$. ■

I Congruence with PAP

Subsequent to preregistering, we changed the following in the theoretical model.

1. We introduce visibility-motivation and the choice of running as an independent for the incumbent in order to accommodate patterns observed in the data.
2. We provide a more general representation of a party nomination process, where incumbents can be ousted through a formal primary election, but also via more opaque, elite-driven processes. Again, this is consistent with the patterns observed in the primary data.
3. We provide an explicit micro-foundation for the concept of a party's structural advantage: stronger parties are able to recruit candidates of higher ability.
4. To simplify the characterization of the equilibrium, we assume that the cost of running is realized when the politician decides to run (and not only when she reaches the general election).

In addition, we made the following changes in the empirical analysis:

1. We only compare the effects of ID against no-ID within ACODE districts and do not compare ACODE to non-ACODE matched districts. **Rationale**: we discovered that plenary meeting minutes information, our proposed performance proxy in non-ACODE districts where incumbents do not have a scorecard, correlates poorly in ACODE districts where we have both scorecards and meeting minutes information. This made the meeting minutes information unusable for our context.
2. We added analysis of **Effective number of challengers** (ENC) that did not appear in the PAP. **Rationale**: in the PAP we discuss looking at both the number of challengers and incumbent vote margin as key electoral outcomes. Since vote margin is rather sensitive to the number of challengers, we opted to using the ENC measure, which by weighting the number of challengers by their vote share, better captures how competitive a constituency becomes following an exogenous transparency shock.
3. In the PAP we discussed several alternatives to operationalizing incumbent performance signal. In the paper, we opted to simply use the most straightforward of the methods we proposed, which is dichotomizing the scorecard score using district medians. **Rationale**: using medians to cut a continuous variable maximizes statistical power, and because it has a natural interpretations of high and low values.

4. The PAP discuss two alternative ways to calculate party advantage based on electoral outcomes in past races: (1) a point system (adding one point if the constituency's plurality winner in a given past race belongs to the party of the incumbent in 2011), and (2) using the median of party vote margin. In the paper we only use #2. **Rationale**: we have learned that median party's vote margins is a more common (and thus defensible) way to calculate party's strength. Note that the correlation between the two alternative measures of party advantage is high: $\rho = 0.81$.

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