Linking Party Preferences and the Composition of Government: A New Standard for Evaluating the Performance of Electoral Democracy

Online Appendix

1 Criteria

1.1 Criteria 1: How many citizens have their preferred party in government?

For each respondent in each election study, we identified the party they gave the highest like-dislike score, with ties broken at random. We then determined, for each respondent, whether their most liked party was in cabinet. We, finally, calculated, for each election, the proportion of all respondents who answered the like-dislike questions whose favorite party was in cabinet. The proportion was calculated weighting respondents using all weights provided in a each election study.

1.2 Criterion 2: Is the most liked party in government?

A weighted mean of like-dislike scores for each party was calculated for each election. Weights included as many of sample, demographic, and political weights as were available in the CSES. We then identified the party with the highest average like-dislike score for each election. We checked whether there were any ties and found that there were none. The party with the highest score was considered the most liked party in a particular election. We then determined whether that party was in government.

1.3 Criterion 3: How liked are governing parties compared to non-governing parties?

Each respondent's like-dislike scores were first calculated for governing and non-governing parties. They were created by calculating a weighted average of like-dislike scores of parties in cabinet and parties not in cabinet, where weights are the proportion of seats in the legislature held by each party that is, respectively,

in government or in the opposition. We then took the difference in the overall scores for governing and non-governing parties. Finally, we calculated the weighted mean difference in ratings between governing and non-governing parties for each election, where weights are all sample, demographic, and political weights that are available in the CSES.

2 JAGS Models

2.1 Criterion 1

2.1.1 Table 3

$Propfic_i$ is the proportion of respondents in election i whose most liked party was in government. Note that models in JAGS use precision (inverse-variance) rather than variance.

Model 1

$$Propfic_i \sim \ \mathcal{N}(mu_i, tau)$$
$$mu_i = \beta_0 + \beta_1 * proportional_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$
$$\beta_0 \sim \mathcal{N}(0, 0.01)$$
$$\beta_1 \sim \mathcal{N}(0, 0.01)$$
$$\beta_2 \sim \mathcal{N}(0, 0.01)$$
$$\beta_3 \sim \mathcal{N}(0, 0.01)$$
$$tau \sim \Gamma(1, 1)$$

Model 2

$$Propfic_i \sim \ \mathcal{N}(mu_i, tau)$$
$$mu_i = \beta_0 + \beta_1 * log(gallagher)_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$
$$\beta_0 \sim \mathcal{N}(0, 0.01)$$
$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1, 1)$$

Model 3

$$Propfic_i \sim \ \mathcal{N}(mu_i, tau)$$

$$mu_i = \beta_0 + \beta_1 * log(MDM)_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1, 1)$$

2.1.2 Table 4

Model 1

$$Propfic_i \sim \ \mathcal{N}(mu_i, tau)$$

$$mu_i =$$

$$\beta_0 + \beta_1 * proportional_i + \beta_2 * partiesgovt_i + \beta_3 * gdppercap_i + \beta_4 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$\beta_4 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1, 1)$$

2.2 Criterion 2

$Mostliked_i$ is a binary variable coded 1 if the most liked party overall in election i was in government and 0 if it was not.

2.2.1 Table 5

Model 1

$$Mostliked_i \sim \ \ Bern(p_i)$$

$$probit(p[i]) = mu_i$$

$$mu_i = \beta_0 + \beta_1 * log(gallagher)_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

Model 2

$$Mostliked_i \sim \ \ Bern(p_i)$$

$$probit(p[i]) = mu_i$$

$$mu_i = \beta_0 + \beta_1 * log(MDM)_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1, 1)$$

2.2.2 Table 6

Model 1

$$Mostliked_i \sim \ \ Bern(p_i)$$

$$probit(p[i]) = mu_i$$

$$mu_i =$$

$$\beta_0 + \beta_1 * log(gallagher)_i + \beta_2 * partiesgovt_i + \beta_3 * gdppercap_i + \beta_4 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$\beta_4 \sim \mathcal{N}(0, 0.01)$$

Model 2

$$Mostliked_i \sim \ \ Bern(p_i)$$

$$probit(p[i]) = mu_i$$

$$mu_i =$$

$$\beta_0 + \beta_1 * log(MDM)_i + \beta_2 * partiesgovt_i + \beta_3 * gdppercap_i + \beta_4 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$\beta_4 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1, 1)$$

2.3 Criterion 3

2.3.1 Table 7

$Lddiff_i$ is the mean difference in weighted like/dislike scores of governing compared to non-governing parties in election i. **Model 1**

$$Lddiff_i \sim \ \ \mathcal{N}(mu_i, tau)$$

$$mu_i = \beta_0 + \beta_1 * proportional_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1,1)$$

Model 2

$$Lddiff_i \sim \ \mathcal{N}(mu_i, tau)$$

$$mu_i = \beta_0 + \beta_1 * log(gallagher)_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1,1)$$

Model 3

$$Lddiff_i \sim \ \mathcal{N}(mu_i, tau)$$

$$mu_i = \beta_0 + \beta_1 * log(MDM)_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1,1)$$

2.3.2 Table 8

Model 1

$$Lddiff_i \sim \ \mathcal{N}(mu_i, tau)$$

$$mu_i =$$

$$\beta_0 + \beta_1 * log(MDM)_i + \beta_2 * partiesgovt_i + \beta_3 * gdppercap_i + \beta_4 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

$$\beta_4 \sim \mathcal{N}(0, 0.01)$$

$$tau \sim \Gamma(1, 1)$$

2.3.3 Model for Figure 2

Model 1

$$Lddiff_i \sim \ \mathcal{N}(mu_i, tau)$$

$$mu_i = \beta_0 + \beta_1 * partiesgovt_i + \beta_2 * gdppercap_i + \beta_3 * freedomhouse_i$$

$$\beta_0 \sim \mathcal{N}(0, 0.01)$$

$$\beta_1 \sim \mathcal{N}(0, 0.01)$$

$$\beta_2 \sim \mathcal{N}(0, 0.01)$$

$$\beta_3 \sim \mathcal{N}(0, 0.01)$$

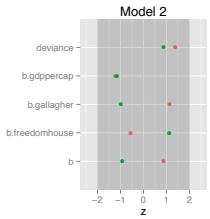
$$tau \sim \Gamma(1, 1)$$

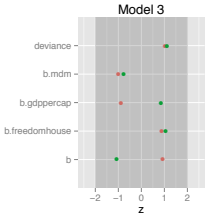
3 Convergence Diagnostics

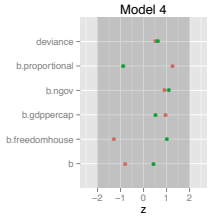
We would conclude that our models had not converged if the Geweke test statistics were greater than 2 or smaller than -2.

Figure 1: Geweke Diagnosic

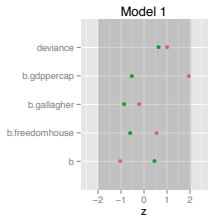
(a) Criterion 1

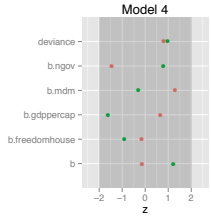




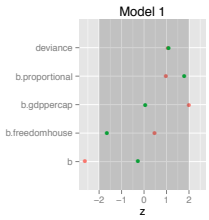


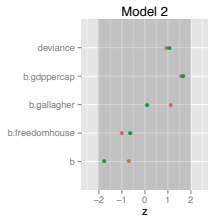
(b) Criterion 2

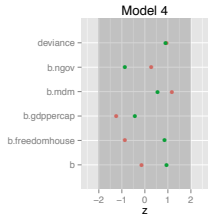




(c) Criterion 3







4 Model for Complete Separation (Criterion 2)

These results were computed using the bayesglm function in the arm package. Default priors were used. The first column is a logistic regression model. The second is a probit model.

Table 1: Results from bayesglm model

	Model 1	Model 2
(Intercept)	1.36	1.27
	(1.99)	(1.57)
proportional	−1.72	−1.56
	(1.47)	(1.37)
freedomhouse	1.02	0.68
	(0.85)	(0.50)
gdppercap	0.01	0.00
	(0.01)	(0.00)
N	84	84
AIC	67.98	67.32
BIC	106.87	106.21
$\log L$	−17.99	−17.66

Standard errors in parentheses

* indicates significance at $p < 0.05$

5 Frequentist Models

These models were run using conventional OLS (Criteria 1 and 3) or probit (criterion 2).

5.1 Criterion 1

Table 2: Criterion 1 Models (without number of parties in government)

	Model 1	Model 2	Model 3
(Intercept)	0.39*	0.45*	0.42*
	(0.05)	(0.04)	(0.04)
proportional	0.07*		
	(0.03)		
gdppercap	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
freedomhouse	0.03	0.04*	0.04*
	(0.02)	(0.02)	(0.02)
log(gallagher)		−0.01	
		(0.01)	
log(mdm)			0.01
			(0.01)
N	84	87	87
R^2	0.09	0.07	0.08
adj. R^2	0.05	0.04	0.05
Resid. sd	0.09	0.09	0.09

Standard errors in parentheses

* indicates significance at $p < 0.05$

Table 3: Criterion 1 (with number of parties in government)

	Model 1
(Intercept)	0.38*
	(0.04)
proportional	−0.00
	(0.03)
ngov	0.05*
	(0.01)
gdppercap	−0.00
	(0.00)
freedomhouse	0.01
	(0.02)
N	84
R^2	0.39
adj. R^2	0.36
Resid. sd	0.07

Standard errors in parentheses

* indicates significance at $p < 0.05$

5.2 Criterion 2

Table 4: Criterion 2 (without number of parties in government)

	Model 1	Model 2
(Intercept)	−1.28	0.35
	(1.07)	(0.96)
log(gallagher)	0.54*	
	(0.26)	
gdppercap	0.01	0.01
	(0.00)	(0.00)
freedomhouse	0.75	0.98
	(0.59)	(0.61)
log(mdm)		−0.41*
		(0.15)
N	87	87
AIC	65.67	61.53
BIC	105.12	100.98
$\log L$	−16.83	−14.76

Standard errors in parentheses

* indicates significance at $p < 0.05$

Table 5: Criterion 2 (with number of parties in government)

	Model 1	Model 2
(Intercept)	−1.02	0.23
	(1.12)	(1.01)
log(gallagher)	0.53*	
	(0.26)	
ngov	−0.12	0.08
	(0.18)	(0.21)
gdppercap	0.01	0.01
	(0.00)	(0.00)
freedomhouse	0.78	0.99
	(0.58)	(0.62)
log(mdm)		−0.44*
		(0.16)
N	87	87
AIC	67.23	63.39
BIC	116.55	112.71
$\log L$	−13.61	−11.69

Standard errors in parentheses

* indicates significance at $p < 0.05$

5.3 Criterion 3

Table 6: Criterion 3 (without number of parties in government)

	Model 1	Model 2	Model 3
(Intercept)	0.49	0.31	0.66*
	(0.39)	(0.32)	(0.31)
proportional	−0.11		
	(0.25)		
gdppercap	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
freedomhouse	0.32	0.29*	0.29*
	(0.18)	(0.14)	(0.14)
log(gallagher)		0.06	
		(0.10)	
log(mdm)			−0.12*
			(0.06)
N	84	87	87
R^2	0.04	0.06	0.11
adj. R^2	0.01	0.03	0.08
Resid. sd	0.72	0.71	0.70

Standard errors in parentheses

* indicates significance at $p < 0.05$

Table 7: Criterion 3 (with number of parties in government)

	Model 1
(Intercept)	0.82*
	(0.30)
log(mdm)	−0.04
	(0.06)
ngov	−0.26*
	(0.07)
gdppercap	0.00
	(0.00)
freedomhouse	0.44*
	(0.14)
N	87
R^2	0.22
adj. R^2	0.19
Resid. sd	0.65

Standard errors in parentheses

* indicates significance at $p < 0.05$

6 Criterion 1 with ties for most liked party removed

Table 8: Main Results

		Non-PR	PR	Overall
Proportion most liked in cabinet (%)		44.50	51.60	51.10
	N	10	74	87

Table 9: Criterion 1. Proportion with Most Liked Party in Cabinet

	Model 1			Model 2			Model 3		
	Mean	SD	P	Mean	SD	P	Mean	SD	P
Intercept	0.42	0.11	1.00	0.48	0.10	1.00	0.45	0.11	1.00
Proportional	0.07	0.07	0.87						
Gallagher*				-0.02	0.12	0.77			
MDM*							0.01	0.04	0.66
Freedom House	0.01	0.05	0.63	0.04	0.07	0.86	0.04	0.04	0.84
GDP per capita	0.00	0.00	0.56	0.00	0.00	0.55	0.00	0.00	0.58
N	84			87			87		

*We used the log of these variables

Table 10: Criterion 1. Proportion with Most Liked Party in Cabinet (with number of parties)

	Model 1		
	Mean	SD	P
Intercept	0.41	0.21	1.00
Proportional	0.02	0.12	0.62
Number of parties	0.04	0.07	0.95
Freedom House	0.00	0.12	0.51
GDP per capita	-0.00	0.00	0.51
N	84		

*We used the log of these variables

7 Analyses using only parliamentary systems

Table 11: Main Results

	Non-PR	PR	Overall
Proportion most liked in cabinet (%)	42.40	48.40	47.90
Most liked party overall in cabinet	100.00	80.90	84.70
Evaluation of governing vs. opposition parties	1.05	0.88	0.93
N	9	47	59

7.1 Criterion 1

Table 12: Criterion 1. Proportion with Most Liked Party in Cabinet

	Model 1			Model 2			Model 3		
	Mean	SD	P	Mean	SD	P	Mean	SD	P
Intercept	0.40	0.16	1.00	0.43	0.17	1.00	0.41	0.20	1.00
Proportional	0.05	0.18	0.75						
Gallagher*				-0.01	0.12	0.56			
MDM*							0.01	0.04	0.71
Freedom House	0.03	0.09	0.68	0.05	0.17	0.86	0.05	0.11	0.86
GDP per capita	-0.00	0.00	0.54	-0.00	0.00	0.58	-0.00	0.00	0.57
N	56			59			59		

*We used the log of these variables

Table 13: Criterion 1. Proportion with Most Liked Party in Cabinet (with number of parties)

	Model 1		
	Mean	SD	P
Intercept	0.38	0.14	1.00
Proportional	-0.03	0.13	0.65
Number of parties	0.06	0.06	0.97
Freedom House	0.02	0.10	0.61
GDP per capita	-0.00	0.00	0.66
N	56		

*We used the log of these variables

7.2 Criterion 2

Table 14: Criterion 2. Most Liked Party in Cabinet

	Model 1			Model 2		
	Mean	SD	P	Mean	SD	P
Intercept	-1.18	2.13	0.17	0.26	1.21	0.61
Gallagher*	0.72	0.69	1.00			
MDM*				-0.38	0.33	1.00
Freedom House	0.71	0.95	0.88	1.03	0.98	0.95
GDP per capita	0.01	0.01	0.84	0.00	0.01	0.78
N	59			59		

*We used the log of these variables

Table 15: Criterion 2. Most Liked Party in Cabinet (with number of parties)

	Model 1			Model 2		
	Mean	SD	P	Mean	SD	P
Intercept	-1.12	2.22	0.20	0.01	1.17	0.52
Gallagher*	0.73	0.74	0.99			
MDM*				-0.43	0.17	1.00
Parties in Govt	-0.03	0.24	0.55	0.16	0.26	0.73
Freedom House	0.72	1.00	0.88	1.06	0.69	0.96
GDP per capita	0.01	0.01	0.84	0.00	0.00	0.77
N	59			59		

*We used the log of these variables

7.3 Criterion 3

Table 16: Criterion 3. How Much More Liked Are Governing Parties Compared to Opposition Parties?

	Model 1			Model 2			Model 3		
	Mean	SD	P	Mean	SD	P	Mean	SD	P
Intercept	0.45	0.45	0.85	0.16	0.39	0.68	0.42	0.37	0.88
Proportional	-0.26	0.27	0.84						
Gallagher*				0.07	0.11	0.75			
MDM*							-0.09	0.14	0.94
Freedom House	0.43	0.22	0.98	0.35	0.18	0.99	0.36	0.18	0.99
GDP per capita	0.00	0.00	0.71	0.00	0.00	0.82	0.00	0.00	0.81
N	56			59			59		

*We used the log of these variables

Table 17: Criterion 3. How Much More Liked Are Governing Parties Compared to Opposition Parties? (with number of parties)

	Model 1		
	Mean	SD	P
Intercept	0.60	0.38	0.96
MDM*	-0.03	0.09	0.69
Number of parties	-0.22	0.20	0.99
Freedom House	0.47	0.17	1.00
GDP per capita	0.00	0.00	0.89
N	59		

*We used the log of these variables