A Tournament Theory of Pork Barrel Politics: The Case of Japan

Online Appendix

This document contains additional tests related to the main paper.

1 Summary Statistics

Table A.1 provides summary statistics for key municipality-level variables used in our analyses.

Table A.1: Summary statistics of the main municipality-level variables used in our analyses.

Variable	N	Mean	Std. Dev.
Log(Transfers$_{t+1}$)	22663	-3.585	.752
Best LDP VS$_{m,t}$	23494	.259	.157
Sum LDP VS$_{m,t}$	23494	.361	.193
Fiscal Strength	22511	.408	.276
Dependent Population	23502	.353	.042
Agriculture	23501	.098	.074
Log(Population)	23502	9.566	1.298
Log(Per Capita Income)	22687	-.214	.422
Population Density	23502	.9	2.23

2 Supplementary Analysis: Within Districts, Increases in Rank Increase Transfers

Table A.2 is analogous to Table 1 in the main paper. Instead of Best LDP $VS_{m,t}$ and rank(Best LDP $VS_{m,t}$), Table A.2 uses Sum LDP $VS_{m,t}$ and rank(Sum LDP $VS_{m,t}$), respectively. The results are substantively similar to those in Table 1 of the main paper. Table A.3 is analogous to Table 2 in the main paper, but includes observations from the two elections after electoral reform. Table A.4 is also analogous to Table 2 in the main paper, but controls for per capita transfers the year of the election, Log(Transfer$_{e_i}$). In both cases, the results are substantively similar to those in Table 2 of the main paper.

Table A.2: This is analogous to Table 1 in the main paper, but with Sum LDP VS$_{m,t}$ and rank(Sum LDP VS$_{m,t}$), respectively.

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Sum LDP VS$_{m,t}$	0.119**		0.179***	
	(0.0413)		(0.0516)	
Rank (Sum LDP VS$_{m,t}$)		0.0362*		0.0475**
		(0.0144)		(0.0181)
Log(Transfers$_t$)	0.458***	0.458***		
	(0.00987)	(0.0103)		
Log(Transfers$_{t-1}$)			0.208***	0.205***
			(0.0116)	(0.0120)
Fiscal Strength$_t$	-0.0181	-0.0231	-0.127	-0.156
	(0.0573)	(0.0623)	(0.0793)	(0.0882)
Dependent Population$_t$	0.518	0.381	0.959*	0.713
	(0.289)	(0.296)	(0.384)	(0.380)
Agriculture$_t$	-0.164	-0.241	-0.0533	-0.154
	(0.275)	(0.285)	(0.410)	(0.427)
Log(Population$_t$)	-0.228*	-0.245*	-0.311**	-0.404***
	(0.100)	(0.111)	(0.113)	(0.120)
Log(Per Capita Income$_t$)	0.0247	0.0621	0.0680	0.141
	(0.0551)	(0.0586)	(0.0793)	(0.0854)
Population Density$_t$	-0.0560	-0.0316	-0.134*	-0.0775
	(0.0626)	(0.0714)	(0.0562)	(0.0642)
Observations	22223	20246	19063	17086
District-Year FE	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y
R-squared	0.42	0.42	0.31	0.30

Robust standard errors clustered on municipality in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3: This is analogous to Table 2 in the main paper, but includes observations from the two elections after electoral reform.

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Δ Best LDP VS	0.134*			
	(0.0580)			
Δ Rank(Best LDP VS)		0.0404*		
		(0.0191)		
ΔSum LDP VS			0.138**	
			(0.0537)	
ΔRank(Sum LDP VS)				0.0562**
				(0.0198)
Δ Fiscal Strength	-0.193**	-0.170*	-0.191*	-0.168*
	(0.0748)	(0.0788)	(0.0747)	(0.0788)
Δ Dependent Population	1.128*	0.834	1.137*	0.843
	(0.573)	(0.633)	(0.573)	(0.633)
Δ Agriculture	-0.192	-0.142	-0.174	-0.139
	(0.502)	(0.528)	(0.502)	(0.527)
Δ Log(Population)	-0.790**	-0.834**	-0.781**	-0.827*
	(0.288)	(0.322)	(0.288)	(0.323)
Δ Log(Per Capita Income)	-0.0598	-0.0209	-0.0589	-0.0204
	(0.103)	(0.113)	(0.103)	(0.113)
Δ Population Density	0.181	0.320	0.179	0.317
	(0.208)	(0.279)	(0.209)	(0.279)
Δ District: HI	0.0614	0.255	0.0476	0.248
	(0.350)	(0.394)	(0.350)	(0.395)
Δ District: People Per Seat	0.308**	0.378*	0.311**	0.383*
	(0.116)	(0.162)	(0.116)	(0.162)
Δ District: Number of LDP Winners	0.00122	0.0482	-0.0141	0.0457
	(0.123)	(0.151)	(0.124)	(0.151)
Δ District: Number of LDP Candidates	-0.0488	-0.0766	-0.0458	-0.0745
	(0.0787)	(0.0865)	(0.0788)	(0.0865)
Observations	18982	16551	18982	16551
District-Year FE	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y
R-squared	0.21	0.21	0.21	0.21

Robust standard errors clustered on municipality in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.4: This is analogous to Table 2 in the main paper, but controls for transfers the year of the election.

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Δ Best LDP VS	0.172**			
	(0.0657)			
Δ Rank(Best LDP VS)		0.0476*		
		(0.0213)		
ΔSum LDP VS			0.203***	
			(0.0596)	
ΔRank(Sum LDP VS)				0.0727***
				(0.0217)
Log(Transfer$_{e_i}$)	0.346***	0.349***	0.346***	0.350***
	(0.0210)	(0.0212)	(0.0210)	(0.0212)
Δ Fiscal Strength	-0.0679	-0.0716	-0.0636	-0.0677
	(0.0882)	(0.0892)	(0.0880)	(0.0892)
Δ Dependent Population	0.412	0.339	0.435	0.356
	(0.765)	(0.770)	(0.767)	(0.770)
Δ Agriculture	0.0687	0.0988	0.0875	0.103
	(0.609)	(0.608)	(0.608)	(0.608)
Δ Log(Population)	-1.114**	-1.040**	-1.101**	-1.032**
	(0.367)	(0.362)	(0.367)	(0.362)
Δ Log(Per Capita Income)	-0.101	-0.0660	-0.0972	-0.0642
	(0.132)	(0.137)	(0.132)	(0.137)
Δ Population Density	0.536*	0.480	0.534	0.476
	(0.272)	(0.288)	(0.274)	(0.288)
Δ District: HI	0.794	0.817	0.746	0.777
	(0.750)	(0.749)	(0.756)	(0.753)
Δ District: People Per Seat	-0.00408	-0.0151	-0.0213	-0.0101
	(0.449)	(0.448)	(0.453)	(0.452)
Δ District: Number of LDP Winners	-0.480	-0.465	-0.532	-0.463
	(0.305)	(0.304)	(0.307)	(0.307)
Δ District: Number of LDP Candidates	-0.118	-0.147	-0.122	-0.153
	(0.411)	(0.411)	(0.414)	(0.413)
Observations	12657	12488	12657	12488
District-Year FE	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y
R-squared	0.26	0.26	0.26	0.26

Robust standard errors clustered on municipality in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3 Analysis: Within Districts, Relationship between Rank and Transfers is Convex

The predicted amounts of transfers shown in Figure 1 are based on the cubic specification of Rank(Best LDP VS) in Model 1 of Table A.5. The dependent variable is per capita transfers in

the year after an election. All models include municipality-level controls and district-year fixed effects. We excluded municipality fixed effects from these analyses because of the high persistence in rankings. Model 2 repeats Model 1 but restricts the analysis to elections prior to the 1994 reform. Model 3 uses Best LDP $VS_{m,t}$ as the dependent variable and Model 4 uses Rank(Sum LDP VS). Graphical representations of the predicted values for all models in Table A.5 reveal a relationship between LDP support and transfers that is similar to that shown in the paper's Figure 1.

Table A.5: Per capita transfers in the year following an election as a cubic function of indicators of LDP support. In the paper, the predicted values in Figure 1 are derived from Model 1.

	(1)	(2)	(3)	(4)
	Rank(Best LDP VS)	Pre-1994 reform	Best LDP $VS_{m,t}$	Rank(Sum LDP VS)
Rank(Best LDP VS)	-0.382	-0.497		
	(1.040)	(1.160)		
Rank(Best LDP VS)^2	-3.205	-3.424		
	(3.383)	(3.919)		
Rank(Best LDP VS)^3	4.605	4.947		
	(2.801)	(3.251)		
Best LDP $VS_{m,t}$			-7.116	
			(5.862)	
Best LDP VS^2			23.70	
			(19.34)	
Best LDP VS^3			-13.63	
			(17.59)	
Rank(Sum LDP VS)				-0.520
				(1.058)
Rank(Sum LDP VS)^2				-2.693
				(3.262)
Rank(Sum LDP VS)^3				4.063
				(2.657)
Fiscal Strength$_t$	1.773***	1.348***	1.956***	1.768***
	(0.414)	(0.400)	(0.392)	(0.419)
Dependent Population$_t$	27.32***	22.71**	29.21***	27.80***
	(6.850)	(7.263)	(6.416)	(6.803)
Agriculture$_t$	-1.430	-2.099	-1.734	-1.514
	(1.480)	(1.574)	(1.455)	(1.485)
Log(Population)$_t$	-1.404***	-1.338***	-1.367***	-1.385***
	(0.260)	(0.283)	(0.241)	(0.257)
Log(Per Capita Income$_t$)	2.093*	1.708	2.077	2.069
	(1.066)	(1.111)	(1.060)	(1.071)
Population Density$_t$	0.449***	0.403***	0.419***	0.441***
	(0.0884)	(0.0911)	(0.0820)	(0.0891)
Observations	17956	15742	19043	17956
District-Year FE	Y	Y	Y	Y
Municipality FE	N	N	N	N
Joint Hypothesis Test	0.0000	0.0000	0.0017	0.0001
R-squared	0.0385	0.0388	0.0421	0.0380

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The joint hypothesis test refers to the probability of an F-test that the coefficients on all three support variables are zero.

4 Supplementary Analysis: Across Districts, Asymmetry in Municipality Size Increases Transfers

Table A.6 is analogous to Table 3 in the paper, but controls for the amount of per capita transfers received the year of the election, defined here as Log(Transfers$_{d,t}$). The results are substantively similar to those in Table 3.

Table A.6: This is analogous to Table 3 in the main paper, but controls for transfers the year of the election.

	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
HI$_{d,t}$	0.737***	0.510	0.795**	1.243
	(0.148)	(0.773)	(0.250)	(0.698)
Log(Transfers$_{d,t}$)	0.187***	0.0325***	0.174***	0.0133
	(0.0268)	(0.00935)	(0.0339)	(0.00876)
log(Number of Municipalities)	0.161**	0.0677	0.143	0.462
	(0.0540)	(0.272)	(0.0857)	(0.262)
Winning LDP VS$_{d,t}$	-0.252*	0.115	-0.228	0.0342
	(0.106)	(0.0645)	(0.184)	(0.0469)
District: Fiscal Strength$_t$	-0.0585	-0.131	-0.0409	-0.207
	(0.140)	(0.194)	(0.222)	(0.150)
District: Dependent Population$_t$	4.021***	3.358**	5.331***	1.071
	(0.877)	(1.151)	(1.511)	(1.093)
District: Agriculture$_t$	3.118***	3.173*	3.551**	-0.521
	(0.895)	(1.442)	(1.192)	(1.193)
District: Log(Population$_t$)	-0.0299	-0.183	0.112	-0.600***
	(0.109)	(0.152)	(0.125)	(0.166)
District: Log(Per Capita Income$_t$)	0.358*	0.392*	0.301	0.523***
	(0.140)	(0.176)	(0.209)	(0.111)
District: Population Density$_t$	0.0364*	-0.102**	0.0411	-0.0705***
	(0.0163)	(0.0391)	(0.0284)	(0.0202)
Malapportionment	-0.0447	-0.0225	-0.104	-0.0335
	(0.0365)	(0.0306)	(0.0525)	(0.0287)
Observations	1046	1046	592	592
Year FE	Y	Y	Y	Y
District FE	N	Y	N	Y
R-squared	0.55	0.55	0.57	0.75

Robust standard errors clustered on district in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5 Analysis: Determinants of LDP Support

Table A.7 reports the results of fixed effect regression models for a municipality's Best LDP $VS_{m,t}$ and Sum LDP $VS_{m,t}$ in the seven HOR elections held between 1980 and 2000 as a function of its $HI_{d,t}$, municipality-level controls, district-level controls, and year fixed effects. While ruralness (measured with proportion of the population employed in agriculture or population density) is associated with higher levels of support for the LDP, $HI_{d,t}$ is associated with lower levels of support.

Table A.7: Support for the LDP across municipalities in the seven HOR elections held between 1980 and 2000 as a function of $HI_{d,t}$, municipality-level controls, district-level controls, and year fixed effects.

	(1)	(2)	(3)	(4)
	bestLDP_VshareVP		sumLDP_VshareVP	
$HI_{d,t}$		-0.181***		-0.177***
		(0.0175)		(0.0194)
Population Density	-0.00767***	-0.00746***	-0.0105***	-0.0103***
	(0.00156)	(0.00158)	(0.00201)	(0.00209)
Log(Population)	-0.0179***	-0.0187***	-0.0222***	-0.0230***
	(0.00235)	(0.00233)	(0.00267)	(0.00265)
Agriculture	0.139***	0.139***	0.240***	0.240***
	(0.0341)	(0.0339)	(0.0393)	(0.0391)
Fiscal Strength	-0.0328**	-0.0366**	-0.0446***	-0.0483***
	(0.0114)	(0.0114)	(0.0123)	(0.0124)
Dependent Population	0.488***	0.526***	0.349***	0.386***
	(0.0668)	(0.0667)	(0.0712)	(0.0713)
Log(Per Capita Income)	0.0332***	0.0241*	0.0271*	0.0182
	(0.00989)	(0.00971)	(0.0108)	(0.0106)
log(Number of Municipalities)	0.000537	-0.0321***	0.0191**	-0.0128
	(0.00577)	(0.00651)	(0.00607)	(0.00693)
District: Fiscal Strength	0.0463**	0.0297*	0.154***	0.138***
	(0.0152)	(0.0135)	(0.0161)	(0.0147)
District: Dependent Population	0.283*	0.219*	-0.00116	-0.0635
	(0.112)	(0.109)	(0.121)	(0.119)
District: Log(Population)	-0.0742***	-0.0547***	-0.0577***	-0.0386***
	(0.00833)	(0.00837)	(0.00939)	(0.00939)
District: Log(Per Capita Income)	0.00907	0.0271***	-0.0225**	-0.00490
	(0.00792)	(0.00703)	(0.00865)	(0.00804)
District: Population Density	-0.00388	-0.0129***	-0.0115***	-0.0203***
	(0.00213)	(0.00226)	(0.00256)	(0.00279)
People Per Seat	0.0136***	0.0107**	-0.0196***	-0.0225***
	(0.00392)	(0.00386)	(0.00424)	(0.00418)
Observations	22195	22195	22195	22195
Year FE	Y	Y	Y	Y
R-squared	0.16	0.17	0.29	0.30

Robust standard errors clustered on the municipality in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6 Senior LDP Politicians, Conservative-aligned Politicians, non-LDP Winners, LDP Losers

As the paper explains, to evaluate whether any observed impact of increases in electoral support on transfers is due to the inclusion of senior LDP politicians, we constructed our four variables

capturing electoral support using only senior LDP winners. We call these Best Senior LDP $\text{VS}_{m,t}$, Sum Senior LDP $\text{VS}_{m,t}$, rank(Best Senior LDP $\text{VS}_{m,t}$) and rank(Sum Senior LDP $\text{VS}_{m,t}$), respectively. To evaluate whether conservative-aligned independents who entered the LDP after the election behaved similarly to winners who had secured the LDP's nomination prior to the election, we constructed the same four support variables using both conservative-aligned independents *and* LDP winners. We call these Best LDP+ $\text{VS}_{m,t}$, Sum LDP+ $\text{VS}_{m,t}$, rank(Best LDP+ $\text{VS}_{m,t}$) and rank(Sum LDP+ $\text{VS}_{m,t}$), respectively. To evaluate whether increases in support for non-LDP winners leads to more transfers, we also constructed the same four variables using non-LDP winners. We call these Best nonLDP $\text{VS}_{m,t}$, Sum nonLDP $\text{VS}_{m,t}$, rank(Best nonLDP+ $\text{VS}_{m,t}$) and rank(Sum nonLDP $\text{VS}_{m,t}$), respectively. To evaluate whether increases in support for losing LDP candidates leads to more transfers, we also constructed the same four variables using non-LDP winners. We call these Best losing LDP $\text{VS}_{m,t}$, Sum losing LDP $\text{VS}_{m,t}$, rank(Best losing LDP+ $\text{VS}_{m,t}$) and rank(Sum losing LDP $\text{VS}_{m,t}$), respectively.

Expanding upon the variable definitions in the paper, let $Sen_{c,t}$ indicate whether candidate c was a senior politician who had served at least 4 previous terms. $LDP_{c,t}$ indicates whether candidate c was a member of the LDP. $LDP+_{c,t}$ indicates whether candidate c was a member of the LDP or was a conservative-aligned independent who joined the LDP after the election. Following our definition of Best LDP $\text{VS}_{m,t}$ in the main paper, we calculated:

$$\text{Best LDP+ VS}_{m,t} = max_{c \in m}\{LDP +_{c,t} w_{c,t} VS_{c,m,t}\} \tag{A.1}$$

$$\text{Best Senior LDP VS}_{m,t} = max_{c \in m}\{Sen_{c,t} LDP_{c,t} w_{c,t} VS_{c,m,t}\} \tag{A.2}$$

$$\text{Best nonLDP VS}_{m,t} = max_{c \in m}\{(1 - LDP_{c,t}) w_{c,t} VS_{c,m,t}\} \tag{A.3}$$

$$\text{Best losing LDP VS}_{m,t} = max_{c \in m}\{LDP_{c,t}(1 - w_{c,t}) VS_{c,m,t}\} \tag{A.4}$$

Next, following our definition of Sum LDP $\text{VS}_{m,t}$ in the main paper, we calculated:

$$\text{Sum LDP+ VS}_{m,t} = \sum_{c \in m} \{LDP +_{c,t} w_{c,t} VS_{c,m,t}\} \tag{A.5}$$

$$\text{Sum Senior LDP VS}_{m,t} = \sum_{c \in m} \{Sen_{c,t} LDP_{c,t} w_{c,t} VS_{c,m,t}\} \tag{A.6}$$

$$\text{Sum nonLDP VS}_{m,t} = \sum_{c \in m} \{(1 - LDP_{c,t}) w_{c,t} VS_{c,m,t}\} \tag{A.7}$$

$$\text{Sum losing LDP VS}_{m,t} = \sum_{c \in m} \{LDP_{c,t}(1 - w_{c,t}) VS_{c,m,t}\} \tag{A.8}$$

As the main paper explains, we created ranked versions of Best LDP $\text{VS}_{m,t}$ and Sum LDP $\text{VS}_{m,t}$ via an algorithm. Using the same algorithm, we also constructed ranked versions of the above eight variables.

Tables A.8, A.9, A.10 and A.11 present our evaluations of the effects of these variables. Table A.8 uses the "best" formulation of the support variable, Table A.9 uses the "rank of the best" formulation, Table A.10 examines the "sum" formulation, and Table A.11 uses the "rank of the sum" formulation, respectively. Each table presents six models. The models in the first columns of each table analyze the impact of increases in electoral support for *all* LDP winners (the sample of candidates studied in the main paper). The models in the second columns analyze the impact of increases in electoral support for our expanded definition of LDP winner (both conservative-aligned and LDP-nominated winners). The models in the third and fourth columns analyze the impact of increases in electoral support for senior LDP winners. The models in the fifth columns analyze the impact of increases in electoral support for non-LDP winners. The models in the sixth columns analyze the impact of increases in electoral support for losing LDP candidates.

To summarize, the models in the second columns of Tables A.8, A.9, A.10 and A.11 reveal that expanding our definition of "LDP politician" to include conservative-aligned independents resulted in slightly larger coefficients on the various support variables. These politicians behave similarly to politicians who received the LDP's nomination before the election. The models in the third and fourth columns of Tables A.8, A.9, A.10 and A.11 show that increases in support for senior LDP politicians are not driving our results. The models in the fifth columns of Tables A.8, A.9, A.10 and A.11 show

Table A.8: Transfers received by a municipality the year after an election is regressed on the level of electoral support the municipality provided, where electoral support is defined as the largest vote share provided by the municipality to a candidate in the following sets of candidates.

	(1) LDP	(2) LDP+	(3) SeniorLDP	(4) SeniorLDP	(5) NonLDP	(6) LosingLDP
Best LDP $VS_{m,t}$	0.123**			0.102*		
	(0.0437)			(0.0459)		
Best LDP+ $VS_{m,t}$		0.141**				
		(0.0442)				
Best Senior LDP $VS_{m,t}$			0.0890*	0.0507		
			(0.0424)	(0.0445)		
Best Non-LDP $VS_{m,t}$					0.0156	
					(0.0551)	
Best Losing LDP $VS_{m,t}$						-0.210***
						(0.0551)
$Log(Transfers_t)$	0.458***	0.458***	0.459***	0.458***	0.459***	0.458***
	(0.00988)	(0.00988)	(0.00987)	(0.00987)	(0.00988)	(0.00988)
$Fiscal\ Strength_t$	-0.0185	-0.0181	-0.0180	-0.0181	-0.0188	-0.0168
	(0.0574)	(0.0575)	(0.0573)	(0.0574)	(0.0572)	(0.0573)
$Dependent\ Population_t$	0.502	0.494	0.521	0.503	0.524	0.534
	(0.290)	(0.290)	(0.289)	(0.290)	(0.289)	(0.290)
$Agriculture_t$	-0.161	-0.159	-0.180	-0.165	-0.178	-0.173
	(0.276)	(0.275)	(0.275)	(0.276)	(0.276)	(0.275)
$Log(Population)_t$	-0.228*	-0.227*	-0.238*	-0.229*	-0.239*	-0.245*
	(0.100)	(0.100)	(0.100)	(0.100)	(0.100)	(0.101)
$Log(Per\ Capita\ Income_t)$	0.0207	0.0200	0.0225	0.0216	0.0201	0.0211
	(0.0551)	(0.0552)	(0.0550)	(0.0551)	(0.0551)	(0.0551)
$Population\ Density_t$	-0.0558	-0.0560	-0.0523	-0.0555	-0.0516	-0.0510
	(0.0628)	(0.0628)	(0.0627)	(0.0627)	(0.0629)	(0.0630)
Observations	22223	22223	22223	22223	22223	22223
District-Year FE	Y	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y	Y
R-squared	0.42	0.42	0.42	0.42	0.42	0.42

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

that increases in support for winning candidates from other parties had no effect on transfers. The models in the sixth columns of Tables A.8, A.9, A.10 and A.11 show that increases in support for losing LDP candidates had a negative impact on transfers. Because LDP politicians in the same district tended to concentrate their vote-gathering efforts on different areas of their district, more votes for a losing LDP candidate may have meant fewer votes for a winning LDP candidate. This would be plausible explanation for why municipalities with more support for losing LDP candidates

Table A.9: Transfers received by a municipality the year after an election is regressed on the municipality's position in a rank order of municipalities in its district, where the ranking is constructed by taking the largest vote share provided by the municipality to a candidate in the following sets of candidates and constructing a ranking from this.

	(1) LDP	(2) LDP+	(3) SeniorLDP	(4) SeniorLDP	(5) NonLDP	(6) LosingLDP
Rank(Best LDP VS$_{m,t}$)	0.0300*			0.0328		
	(0.0139)			(0.0226)		
Rank(Best LDP+ VS$_{m,t}$)		0.0441**				
		(0.0139)				
Rank(Best Senior LDP VS$_{m,t}$)			0.0240	0.0105		
			(0.0170)	(0.0191)		
Rank(Best Non-LDP VS$_{m,t}$)					-0.00484	
					(0.0131)	
Rank(Best Losing LDP VS$_{m,t}$)						-0.0709***
						(0.0205)
Log(Transfers$_t$)	0.458***	0.458***	0.436***	0.435***	0.447***	0.484***
	(0.0103)	(0.0103)	(0.0139)	(0.0139)	(0.0117)	(0.0183)
Fiscal Strength$_t$	-0.0227	-0.0164	-0.0890	-0.0879	-0.0187	-0.154
	(0.0623)	(0.0622)	(0.0756)	(0.0757)	(0.0646)	(0.108)
Dependent Population$_t$	0.377	0.339	0.598	0.581	0.744*	1.094
	(0.297)	(0.297)	(0.404)	(0.404)	(0.341)	(0.644)
Agriculture$_t$	-0.240	-0.218	-0.234	-0.224	-0.367	0.00176
	(0.285)	(0.283)	(0.446)	(0.446)	(0.329)	(0.473)
Log(Population$_t$)	-0.247*	-0.236*	-0.345**	-0.337**	-0.414***	-0.351*
	(0.111)	(0.109)	(0.129)	(0.128)	(0.0990)	(0.149)
Log(Per Capita Income$_t$)	0.0597	0.0419	-0.0231	-0.0231	-0.0269	0.0704
	(0.0587)	(0.0587)	(0.0865)	(0.0866)	(0.0665)	(0.106)
Population Density$_t$	-0.0318	-0.0338	-0.0481	-0.0508	-0.0273	-0.0632
	(0.0713)	(0.0707)	(0.0968)	(0.0969)	(0.0585)	(0.0623)
Observations	20246	20469	12660	12660	16985	7497
District-Year FE	Y	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y	Y
R-squared	0.42	0.42	0.42	0.42	0.42	0.43

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

received fewer transfers.

Table A.10: Transfers received by a municipality the year after an election is regressed on the level of electoral support the municipality provided, where electoral support is defined as the total vote share provided by the municipality to different sets of candiates.

	(1) LDP	(2) LDP+	(3) SeniorLDP	(4) SeniorLDP	(5) NonLDP	(6) LosingLDP
Sum LDP $VS_{m,t}$	0.119**			0.104*		
	(0.0413)			(0.0428)		
Sum LDP+ $VS_{m,t}$		0.129**				
		(0.0424)				
Sum Senior LDP $VS_{m,t}$			0.0773	0.0403		
			(0.0415)	(0.0430)		
Sum Non-LDP $VS_{m,t}$					0.0385	
					(0.0523)	
Sum Losing LDP $VS_{m,t}$						-0.208***
						(0.0550)
Log(Transfers$_t$)	0.458***	0.458***	0.459***	0.458***	0.459***	0.458***
	(0.00987)	(0.00988)	(0.00987)	(0.00987)	(0.00988)	(0.00988)
Fiscal Strength$_t$	-0.0181	-0.0179	-0.0184	-0.0179	-0.0191	-0.0170
	(0.0573)	(0.0573)	(0.0572)	(0.0573)	(0.0572)	(0.0573)
Dependent Population$_t$	0.518	0.514	0.524	0.518	0.519	0.533
	(0.289)	(0.290)	(0.289)	(0.289)	(0.289)	(0.290)
Agriculture$_t$	-0.164	-0.166	-0.184	-0.169	-0.176	-0.173
	(0.275)	(0.275)	(0.275)	(0.275)	(0.276)	(0.276)
Log(Population$_t$)	-0.228*	-0.227*	-0.239*	-0.229*	-0.239*	-0.245*
	(0.100)	(0.100)	(0.100)	(0.100)	(0.100)	(0.101)
Log(Per Capita Income$_t$)	0.0247	0.0250	0.0230	0.0253	0.0184	0.0211
	(0.0551)	(0.0551)	(0.0550)	(0.0551)	(0.0551)	(0.0551)
Population Density$_t$	-0.0560	-0.0558	-0.0524	-0.0559	-0.0514	-0.0508
	(0.0626)	(0.0625)	(0.0626)	(0.0625)	(0.0630)	(0.0630)
Observations	22223	22223	22223	22223	22223	22223
District-Year FE	Y	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y	Y
R-squared	0.42	0.42	0.42	0.42	0.42	0.42

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7 Analysis with Most Powerful LDP Politician

To evaluate whether our results are better explained by the level of support the municipality provided to the *most powerful* LDP politician in its district (defined as the politician who captured the largest district-level vote share), we reran the main paper's Table 1 with a control for the vote share captured by this politician (High LDP $VS_{m,t}$). Table A.12 reveals that its coefficient is not significant in any model.

Table A.11: Transfers received by a municipality the year after an election is regressed on the municipality's position in a rank order of municipalities in its district, where the ranking is constructed by taking the total vote share the municipality gave to different sets of candidates and constructing a ranking from this.

	(1) LDP	(2) LDP+	(3) SeniorLDP	(4) SeniorLDP	(5) NonLDP	(6) LosingLDP
Rank(Sum LDP $VS_{m,t}$)	0.0362*			0.0364		
	(0.0144)			(0.0224)		
Rank(Sum LDP+ $VS_{m,t}$)		0.0475**				
		(0.0147)				
Rank(Sum Senior LDP $VS_{m,t}$)			0.0293	0.0150		
			(0.0171)	(0.0191)		
Rank(Sum Non-LDP $VS_{m,t}$)					-0.00682	
					(0.0138)	
Rank(Sum Losing LDP $VS_{m,t}$)						-0.0699***
						(0.0206)
Log(Transfers$_t$)	0.458***	0.458***	0.436***	0.435***	0.447***	0.485***
	(0.0103)	(0.0103)	(0.0139)	(0.0139)	(0.0117)	(0.0183)
Fiscal Strength$_t$	-0.0231	-0.0173	-0.0898	-0.0894	-0.0186	-0.154
	(0.0623)	(0.0622)	(0.0756)	(0.0757)	(0.0646)	(0.108)
Dependent Population$_t$	0.381	0.350	0.592	0.579	0.746*	1.102
	(0.296)	(0.296)	(0.404)	(0.403)	(0.342)	(0.646)
Agriculture$_t$	-0.241	-0.225	-0.240	-0.232	-0.369	0.00658
	(0.285)	(0.282)	(0.445)	(0.445)	(0.329)	(0.473)
Log(Population$_t$)	-0.245*	-0.235*	-0.345**	-0.335**	-0.414***	-0.350*
	(0.111)	(0.109)	(0.128)	(0.128)	(0.0989)	(0.150)
Log(Per Capita Income$_t$)	0.0621	0.0453	-0.0224	-0.0199	-0.0262	0.0707
	(0.0586)	(0.0586)	(0.0865)	(0.0864)	(0.0666)	(0.106)
Population Density$_t$	-0.0316	-0.0335	-0.0479	-0.0517	-0.0273	-0.0631
	(0.0714)	(0.0709)	(0.0967)	(0.0969)	(0.0585)	(0.0625)
Observations	20246	20469	12660	12660	16985	7497
District-Year FE	Y	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y	Y
R-squared	0.42	0.42	0.42	0.42	0.42	0.43

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8 Analysis: Municipalities at the Top of the Ranking

We examined whether the results in Tables 1 and 2 of the paper are being driven by the inclusion of relatively *unsupportive* municipalities and do not hold among the highly-supportive ones. We restricted our sample to the 929 municipalities that had scored either the highest or second-highest on Sum LDP $VS_{m,t}$ in their district in the previous election for the four elections held between 1983 and 1993. Of these 929 municipalities, we note that 478 of them remained in one of the top two

Table A.12: Replication of the main paper's Table 1 with the inclusion of High LDP VS.

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Best LDP $VS_{m,t}$	0.130**		0.201***	
	(0.0471)		(0.0585)	
Rank (Best LDP $VS_{m,t}$)		0.0284		0.0446*
		(0.0149)		(0.0186)
$\text{Log(Transfers}_t)$	0.458***	0.458***		
	(0.00988)	(0.0103)		
$\text{Log(Transfers}_{t-1})$			0.208***	0.204***
			(0.0116)	(0.0120)
High LDP $VS_{m,t}$	-0.0121	0.0100	-0.0217	0.00576
	(0.0382)	(0.0380)	(0.0505)	(0.0509)
Fiscal Strength_t	-0.0183	-0.0229	-0.128	-0.157
	(0.0573)	(0.0623)	(0.0794)	(0.0884)
$\text{Dependent Population}_t$	0.504	0.374	0.932*	0.696
	(0.290)	(0.297)	(0.384)	(0.380)
Agriculture_t	-0.163	-0.238	-0.0520	-0.149
	(0.276)	(0.286)	(0.409)	(0.427)
$\text{Log(Population}_t)$	-0.228*	-0.246*	-0.312**	-0.403***
	(0.100)	(0.111)	(0.113)	(0.120)
$\text{Log(Per Capita Income}_t)$	0.0206	0.0598	0.0597	0.138
	(0.0551)	(0.0587)	(0.0794)	(0.0856)
$\text{Population Density}_t$	-0.0558	-0.0319	-0.134*	-0.0780
	(0.0628)	(0.0713)	(0.0563)	(0.0643)
Observations	22223	20246	19063	17086
District-Year FE	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y
R-squared	0.42	0.42	0.31	0.30

Robust standard errors clustered on municipality in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

positions in the subsequent election. Table A.13 examines the effects of a *change* in Rank(Sum LDP $VS_{m,t}$) (between the previous and present election) on change in the amount of transfers received (between the amount received the year after the previous election and the year after the present election) for this sample of 929 municipalities that were highly-supportive in the previous election. Model 1 controls for the amount of transfers received the year of the election, while Model 2 controls for prior transfers and other municipality-level characteristics. Because we only have two observations per district and municipalities are not always present in the sample for two consecutive elections, we do not estimate district or municipality fixed effects.

The positive, statistically significant coefficient on Δ Rank(Sum LDP $VS_{m,t}$) indicates that highly-

supportive municipalities that drop in rank get less money after the election relative to the amount they received after the previous election. Because we are looking at municipalities that were ranked first or second in a district that contains an average of 34 municipalities, almost all cases of change in Rank(Sum LDP VS) constitute slippage from the top two positions (although, some cases constitute movement from second to first place in the ranking). This confirms that even though highly-supportive municipalities tend to remain highly-supportive, *when highly-supportive municipalities slip, they receive less transfers*. This is powerful evidence that highly-supportive municipalities are not insulated from the tournament.

Table A.13: Replication of the main paper's Table 2, but restricted to the sample of municipalities scoring highest and second-highest, respectively, on Sum LDP $VS_{m,t}$ in each district in the previous election. The coefficient on Δ Rank(Sum LDP $VS_{m,t}$) estimates the effects of change in this position between two elections on the amount of transfers received after the subsequent election.

	(1)	(2)
	Model 1	Model 2
Δ Rank(Sum LDP $VS_{m,t}$)	0.164*	0.193*
	(0.0774)	(0.0873)
Log(Transfers$_t$)	0.0927***	0.112***
	(0.0244)	(0.0288)
Fiscal Strength$_t$		0.173
		(0.135)
Dependent Population$_t$		-1.283
		(0.808)
Agriculture$_t$		0.321
		(0.372)
Log(Population$_t$)		-0.00165
		(0.0261)
Log(Per Capita Income)		-0.118
		(0.115)
Observations	929	867
Year FE	Y	Y
R-squared	0.16	0.17

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

9 Distribution of District-level Asymmetry Before and After Electoral Reform

Finally, Figure A.1 displays the distribution of the variable used to test Hypothesis III, $\text{HI}_{d,t}$, before and after electoral reform. As the paper notes, there are slightly more districts comprised of evenly-sized municipalities before reform and slightly more comprised of asymmetrically-sized municipalities after reform, but the distributions are otherwise similar.

Figure A.1: Distribution of $\text{HI}_{d,t}$ before and after Japan's 1994 electoral reform.