

Supporting Information:
The Countervailing Effects of Competition on Public Goods Provision: When Bargaining Inefficiencies Lead to Bad Outcomes

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A Evidence Review

To generate a comprehensive list of studies that examine the effect of political competition on public goods provision, we had a research assistant conduct a literature search in Google Scholar, JSTOR, and top political science and economic journal websites for articles written in the last 20 years. Search terms included “democracy,” “electoral competition” or “political competition,” and “public goods” or other specific welfare outcomes (e.g. education, health). Targeted political science journals included *American Political Science Review*, *Quarterly Journal of Political Science*, *American Journal of Political Science*, *British Journal of Political Science*, *Journal of Politics*, *Comparative Political Studies*, and *World Politics*. Targeted economics journals included *American Economic Review*, *Quarterly Journal of Economics*, *Review of Economics and Statistics*, *Review of Economic Studies*, *Journal of Political Economy*, *The Economic Journal*, *Journal of Development Economics*, and *World Development*.

Table A.1: Evidence Review of the Relationship between Political Competition and Public Goods Provision

Citation	Context	DV	IV	Effect	Details
Boix (2001)	cross-country	Size of the public sector	Democracy	Mixed	Positive relationship in higher-income countries, none in low-income ones
Mukherjee (2003)	cross-country	Size of expenditures	Number and size of legislative parties	Mixed	An increase of represented parties leads to a decrease in public goods; transfers and subsidies increase
Ross (2006)	cross-country	Child mortality	Democracy (POLITY)	Mixed	Highly democratic nations spend more on health and education, but tends to benefit the middle and upper classes
Stasavage (2005)	cross-country	Government spending on education	Multiparty competition, election year, GDP per capita	Mixed	Increased political competition leads to more spending on primary education; university education is unaffected
Chhibber and Nooruddin (2004)	India	Public goods	Competition from two party and multiparty systems	Mixed	Positive relationship in two party systems, not in multiparty ones
Sjahrir, Kis-Katos and Schulze (2014)	Indonesia	Per capita government expenditures	Impact of direct elections	Mixed	Overspending higher in districts with less competition, but direct elections have not improved governance
Boulding and Brown (2014)	Brazil	Incumbent victory and turnout	Budget size	Negative	More political competition associated with less social spending
Chatterjee (2018)	India	Provision of electricity	Transition from single-party rule	Negative	The transition from single party is harmful for provision of electricity
Banerjee and Somanathan (2007)	India	Share of villages with public goods	Fragmentation of competition (vote shares of parties)	Null	Fragmentation had no impact on provisions of most goods

Evidence Review of the Relationship between Political Competition and Public Goods Provision (cont.)

Citation	Context	DV	IV	Effect	Details
Cleary (2007)	Mexico	Municipal government performance	Electoral competition	Null	Electoral competition did not improve delivery of public goods
Ashworth et al. (2014)	Belgium	Government efficiency	Political competition	Positive	Net positive: increased political competition improves local efficiency (which can confer goods), but can also lead to fracturing
Arvate (2013)	Brazil	Local public goods	Number of executive candidates running	Positive	An increase the number of executive candidates running led an increase in the supply of local goods
Binzer Hobolt and Klemmensen (2008)	Britain, Denmark, US	Executive rhetoric and changes in public expenditures	Electoral uncertainty and policy preference	Positive	High levels of executive discretion with opposition of political parties led to low levels of output
Besley and Kudamatsu (2006)	cross-country	Life expectancy	Measure of democracy, income level	Positive	Health spending is higher in more democratic countries
Deacon (2009)	cross-country	Public good provision	Regime type	Positive	Democratic regimes are likely to spend more on public goods provisions
Lake and Baum (2001)	cross-country	Education and health provision	Level of democracy	Positive	Public good provision higher in more democratic states
Boyne et al. (2012)	England	Composite measure of service quality and effectiveness	Political party control and change in control	Positive	Positive
Hecock (2006)	Mexico	Education spending	Political competition	Positive	More competitive democracies are more responsive to social demands
Crost and Kambhampati (2010)	North India	Number of schools and school infrastructure	Margin of victory and probability of losing seat	Positive	Turnover among governing parties, and a lower margin of victory, has a positive effect education provision
Besley, Persson and Sturm (2010)	US	Personal income, infrastructure spending	Political Competition	Positive	Increased competition led to increased infrastructure spending

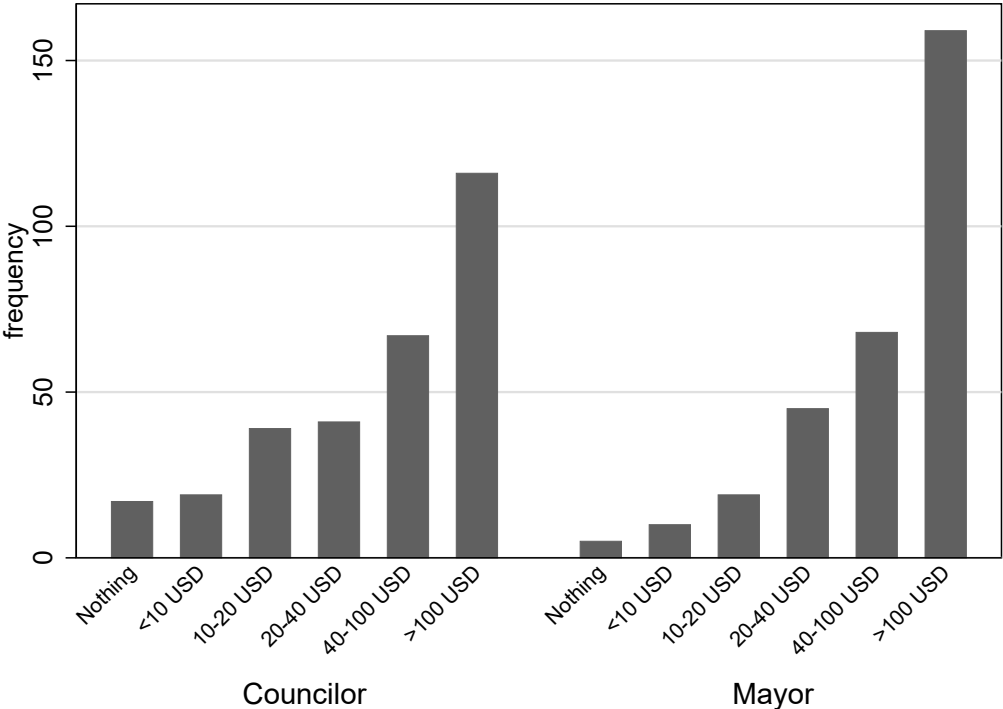
B Descriptive Statistics

B.1 Summary Statistics

	Mean	SD	Min	Max	N
Dependent Variables					
2013-2008: Anderson index (4 components)	-0.00	0.51	-3.49	3.62	666
2013-2008: PCA index; first component (4 inputs)	0.00	0.94	-5.70	4.76	592
Boreholes (2013)	0.00	1.00	-0.92	7.57	660
Clinics (2013)	-0.00	1.00	-1.13	8.33	660
Rural Roads (2013)	0.00	1.00	-0.93	6.38	655
Schools (2013)	-0.00	1.00	-1.34	6.17	660
Boreholes (2008)	0.00	1.00	-0.92	7.84	654
Clinics (2008)	0.00	1.00	-1.19	7.39	636
Rural Roads (2008)	0.00	1.00	-0.57	9.18	660
Schools (2008)	0.00	1.00	-1.16	7.40	612
Independent Variables					
Difference in HHI (2009-2004)	-0.03	0.16	-0.68	0.76	664
Difference in Margin (2009-2004)	-0.03	0.23	-1.00	0.87	664
Competition, HHI (2009)	0.37	0.16	0.13	1.00	665
Competition, Margin (2009)	0.21	0.20	0.00	1.00	665
Competition, HHI (2004)	0.40	0.18	0.11	1.00	664
Competition, Margin (2004)	0.24	0.24	0.00	1.00	664
Preference Fractionalization	0.77	0.05	0.55	0.85	232
Controls					
Difference in Volatility (2009-2004)	-0.14	0.26	-1.00	1.00	660
Volatility (2004)	0.59	0.23	0.00	1.00	662
Public Goods Index (2008)	0.00	0.75	-1.03	4.53	666
Public Goods Index, PCA (2008)	0.00	1.46	-1.93	8.92	598
Difference in Logged Population (2009-1998)	0.35	0.23	-0.72	1.77	666
Percent of Local Roads Paved (2008)	8.26	20.04	0.00	100.00	666
Level of Electrification (2008)	3.73	12.77	0.00	263.70	666

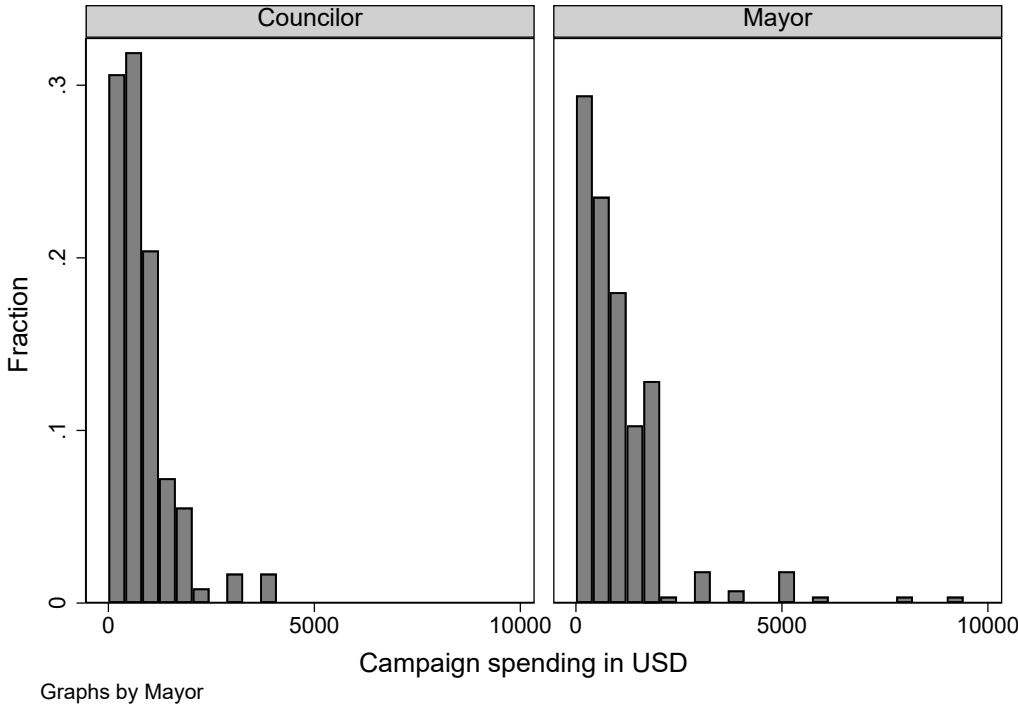
B.2 Politician spending, 2016 survey of Malian politicians

Figure A.1: Distribution of monthly transfers to constituents (2009-2016), by post



Note: Informed by a pre-survey, we used a multiple-choice response set with pre-defined increments to increase reliability. Values are translated into USD amounts from franc CFA using the exchange rate of 1 USD = 500 CFA.

Figure A.2: Distribution of estimated campaign spending in 2016, by post



Note: For better visibility, we exclude three extreme outliers from the graphic depiction of the distribution.

C Robustness Checks

C.1 Accounting for Time Trends

Table A.2: Effect of Change in Political Competition (2004-2009) on Change in Public Goods Index (2008-2013), Including Region-Specific Time Trends

	(1)	(2)	(3)	(4)	(5)
Panel A: HHI measure					
Difference in HHI (2009-2004)	0.202 ⁺ (0.102)	0.225* (0.107)	0.202 ⁺ (0.105)	0.204 ⁺ (0.111)	0.413* (0.170)
Public Goods Index (2008)	-0.236*** (0.047)	-0.235*** (0.047)	-0.256*** (0.050)	-0.245*** (0.048)	-0.264*** (0.050)
Kayes	-0.127 (0.107)	-0.130 (0.108)	-0.132 (0.115)	-0.165 (0.106)	-0.124 (0.116)
Sikasso	-0.319** (0.109)	-0.326** (0.111)	-0.320** (0.118)	-0.330** (0.110)	-0.318* (0.120)
Segou	-0.208 ⁺ (0.112)	-0.206 ⁺ (0.114)	-0.201 ⁺ (0.120)	-0.216 ⁺ (0.108)	-0.196 (0.120)
Mopti	-0.219 ⁺ (0.112)	-0.228 ⁺ (0.114)	-0.224 ⁺ (0.122)	-0.234* (0.110)	-0.220 ⁺ (0.123)
Tombouctou	-0.346* (0.139)	-0.349* (0.141)	-0.355* (0.143)	-0.304* (0.126)	-0.342* (0.143)
Gao	-0.377** (0.133)	-0.383** (0.134)	-0.381* (0.145)	-0.362** (0.130)	-0.365* (0.141)
Kidal	-0.526*** (0.109)	-0.520*** (0.116)	-0.588*** (0.116)	-0.465*** (0.125)	-0.553*** (0.120)
Difference in Volatility (2009-2004)		0.065 (0.067)	0.078 (0.069)	0.071 (0.066)	0.100 (0.071)
Difference in Logged Population (2009-1998)			0.045 (0.057)	0.090 (0.061)	0.049 (0.057)
Kilometers of Paved Roads 2008			0.000 (0.000)		0.000 (0.000)
Number of Sources of National Electricity 2008			0.138** (0.047)		0.131** (0.047)
NGO/Development Projects 2008			0.001 (0.004)		0.001 (0.004)
Change in Km of Paved Roads (2013-2008)				0.000* (0.000)	
Change, Sources of Electricity (2013-2008)				0.133* (0.065)	
Change in NGO/Dev. Projects (2008-2013)				0.014** (0.004)	
Majority Party					-0.061 (0.039)
Majority Party × Difference in HHI					-0.277 (0.204)
Constant	0.214* (0.096)	0.227* (0.099)	0.184 (0.111)	0.166 (0.099)	0.212 ⁺ (0.114)

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	(1)	(2)	(3)	(4)	(5)
Panel B: Margin of victory measure					
Difference in Margin (2009-2004)	0.149*	0.161*	0.154*	0.145*	0.329*
	(0.065)	(0.068)	(0.066)	(0.069)	(0.132)
Public Goods Index (2008)	-0.234***	-0.233***	-0.255***	-0.244***	-0.260***
	(0.047)	(0.047)	(0.049)	(0.047)	(0.050)
Kayes	-0.131	-0.134	-0.135	-0.168	-0.133
	(0.107)	(0.108)	(0.116)	(0.107)	(0.118)
Sikasso	-0.316**	-0.323**	-0.317*	-0.327**	-0.319*
	(0.110)	(0.111)	(0.119)	(0.111)	(0.122)
Segou	-0.209 ⁺	-0.207 ⁺	-0.202 ⁺	-0.216 ⁺	-0.202
	(0.111)	(0.113)	(0.120)	(0.108)	(0.121)
Mopti	-0.217 ⁺	-0.224 ⁺	-0.221 ⁺	-0.231*	-0.223 ⁺
	(0.112)	(0.114)	(0.122)	(0.110)	(0.125)
Tombouctou	-0.336*	-0.337*	-0.343*	-0.293*	-0.330*
	(0.142)	(0.144)	(0.146)	(0.129)	(0.146)
Gao	-0.368**	-0.372**	-0.372*	-0.353**	-0.354*
	(0.134)	(0.136)	(0.146)	(0.131)	(0.143)
Kidal	-0.524***	-0.518***	-0.587***	-0.462***	-0.560***
	(0.109)	(0.116)	(0.117)	(0.125)	(0.120)
Difference in Volatility (2009-2004)		0.065	0.079	0.071	0.103
		(0.068)	(0.070)	(0.067)	(0.073)
Difference in Logged Population (2009-1998)			0.049	0.095	0.051
			(0.057)	(0.062)	(0.057)
Kilometers of Paved Roads 2008			0.000		0.000
			(0.000)		(0.000)
Number of Sources of National Electricity 2008			0.140**		0.136**
			(0.047)		(0.046)
NGO/Development Projects 2008			0.001		0.000
			(0.004)		(0.004)
Change in Km of Paved Roads (2013-2008)				0.000*	
				(0.000)	
Change, Sources of Electricity (2013-2008)				0.134*	
				(0.065)	
Change in NGO/Dev. Projects (2008-2013)				0.014**	
				(0.004)	
Majority Party					-0.057
					(0.037)
Majority Party × Difference in Margin					-0.256
					(0.159)
Constant	0.211*	0.223*	0.180	0.162	0.213 ⁺
	(0.097)	(0.100)	(0.112)	(0.100)	(0.117)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3: Effect of Change in Political Competition (2004-2009) on Change in Public Goods Index (2008-2013), Dropping Initial Period Level of Dependent Variable

	(1)	(2)	(3)	(4)	(5)
Panel A: HHI measure					
Difference in HHI (2009-2004)	0.086 (0.133)	0.112 (0.139)	0.102 (0.139)	0.092 (0.138)	0.236 (0.227)
Difference in Volatility (2009-2004)		0.078 (0.062)	0.075 (0.063)	0.088 (0.059)	0.079 (0.063)
Difference in Logged Population (2009-1998)			0.045 (0.056)	0.052 (0.056)	0.041 (0.056)
Kilometers of Paved Roads 2008			-0.000 (0.000)		-0.000 (0.000)
Number of Sources of National Electricity 2008			0.033 (0.050)		0.030 (0.050)
NGO/Development Projects 2008			-0.003 (0.005)		-0.003 (0.005)
Change in Km of Paved Roads (2013-2008)				0.000** (0.000)	
Change, Sources of Electricity (2013-2008)				0.092 (0.069)	
Change in NGO/Dev. Projects (2008-2013)				0.014** (0.005)	
Majority Party					0.008 (0.052)
Majority Party \times Difference in HHI					-0.255 (0.242)
Constant	0.002 (0.033)	0.014 (0.034)	0.011 (0.049)	-0.037 (0.042)	0.017 (0.055)

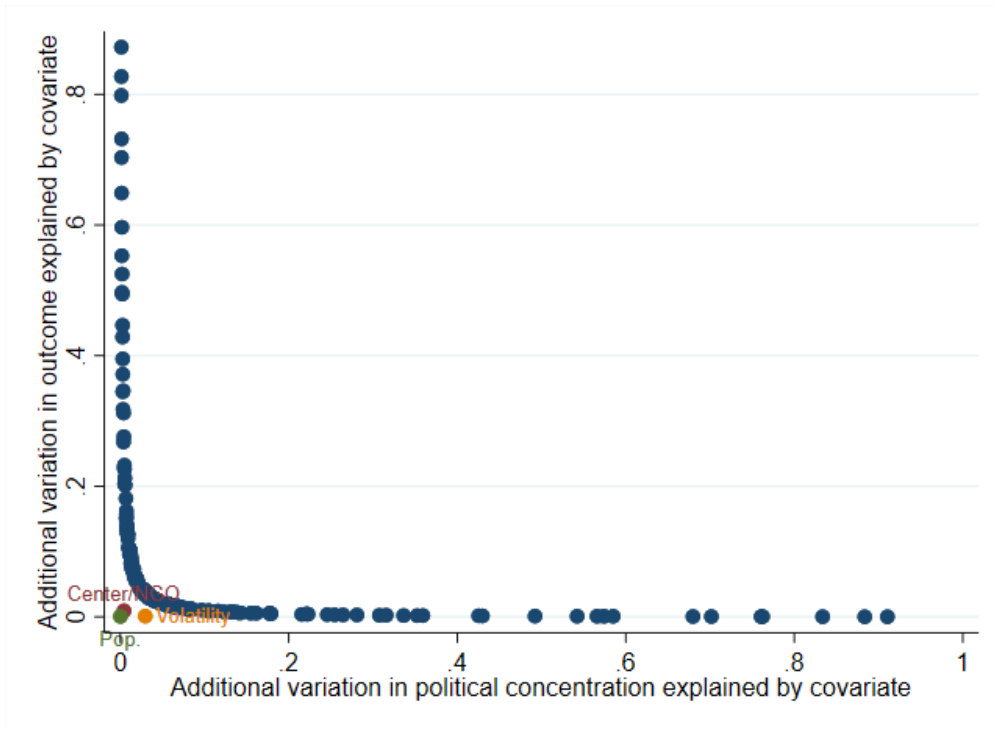
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	(1)	(2)	(3)	(4)	(5)
Panel B: Margin of victory measure					
Difference in Margin (2009-2004)	0.126 (0.088)	0.144 (0.091)	0.142 (0.091)	0.119 (0.090)	0.295 ⁺ (0.165)
Difference in Volatility (2009-2004)		0.089 (0.064)	0.087 (0.065)	0.096 (0.061)	0.097 (0.066)
Difference in Logged Population (2009-1998)			0.048 (0.056)	0.055 (0.056)	0.044 (0.057)
Kilometers of Paved Roads 2008			-0.000 (0.000)		-0.000 (0.000)
Number of Sources of National Electricity 2008			0.032 (0.049)		0.030 (0.049)
NGO/Development Projects 2008			-0.003 (0.005)		-0.003 (0.005)
Change in Km of Paved Roads (2013-2008)				0.000 ^{**} (0.000)	
Change, Sources of Electricity (2013-2008)				0.092 (0.069)	
Change in NGO/Dev. Projects (2008-2013)				0.014 ^{**} (0.005)	
Majority Party					0.001 (0.048)
Majority Party × Difference in Margin					-0.270 (0.189)
Constant	0.004 (0.032)	0.017 (0.034)	0.013 (0.048)	-0.035 (0.041)	0.024 (0.053)
Observations	664	660	660	660	660

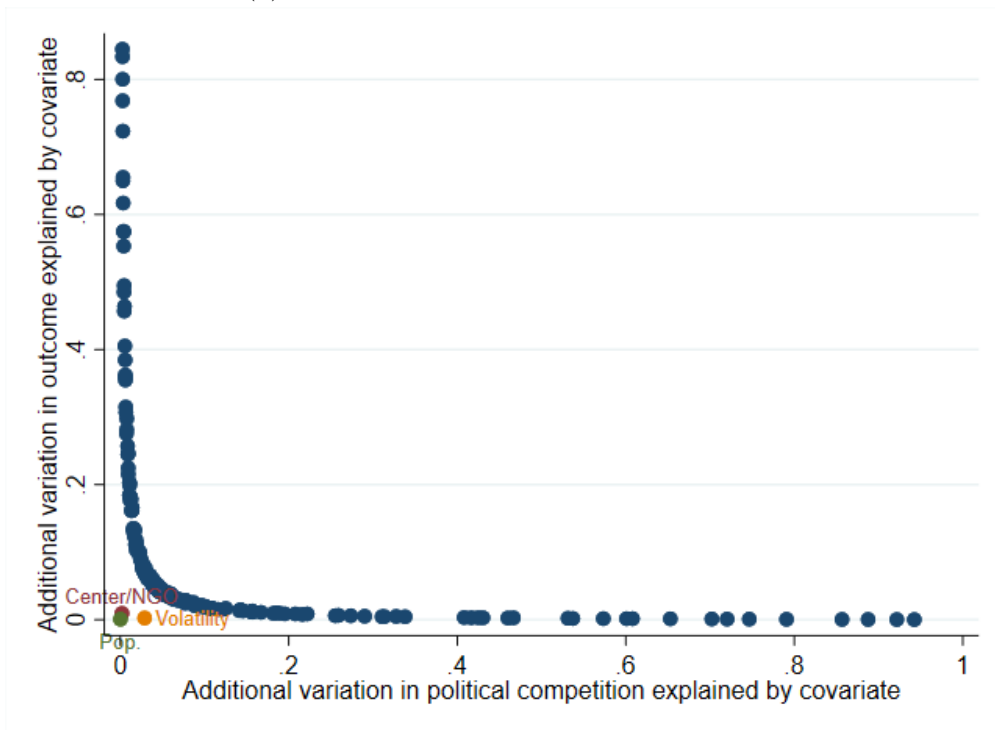
OLS models with standard errors clustered at the circle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C.2 Generalized Sensitivity Analysis

Imbens (2003) and Harada (2012) describe sensitivity analysis that helps us examine whether our results are appreciably affected by omitted variable bias. Specifically, we take our preferred specification of column 3 in Table 1 and relax the exogeneity assumption to allow for correlation between political competition and unobserved covariates correlated with both political competition and our public goods index. We allow a vertical axis to show the marginal increase in the R-squared from adding an unobserved covariate to a regression of the public goods index on our full set of controls. We let a horizontal axis show the the marginal increase in the R-squared from adding the covariate to a regression of political competition on our full set of controls. Generating pseudo-unobservables via 200 iterations, Figures A.3a (for our HHI measure of political competition) and Figure A.3b (for our margin of victory measure) each plot a series of points that trace out a curve representing the combination of R-squared values that would lead to a halving of our effect size—thus significantly altering our empirical findings. Blattman and Annan (2010) perform a similar test. As the figures illustrate, modest correlation between political competition and an omitted variable would only be problematic in the case of very high correlation between that same omitted variable and our public goods index. To shed light on how much correlation between some hypothetical omitted covariate and our key dependent and explanatory variables to expect, we also plot, for each of our three (sets of) controls, its partial correlation with political competition and with our public goods index. These controls are: (1) the difference in logged population, (2) the difference in volatility, and (3) initial period levels of public goods provision by the central government and NGOs projects. The HHI and margin of victory sub-figures are nearly identical, likely reflecting that similar types of omitted variables affect each. And in both figures, none of the three sets of existing controls comes close to the threshold for reducing our estimated coefficient on political competition by half. Hence, any omitted variable would need to be a lot more influential than our existing control sets to invalidate our findings. This substantially supports our causal interpretation of the results.



(a) HHI measure of political competition



(b) Margin of victory measure of political competition

Figure A.3: Robustness to Relaxing the Exogeneity Assumption

Notes: Pop indicates difference in logged population 2009–1998), Volatility indicates difference in volatility (2009–2004), and Center/NGO indicates controls for initial period levels of public goods provision by the central government (kilometers of paved roads and number of sources of electricity in 2008) and the number of NGO/ development projects in 2008.

C.3 Use of Alternate Measures of Political Competition

Measures of bargaining power, such as Shapley-Shubik or Banzhaf indices, take into account the extent to which a party is formative on any given coalition due to their ability to swing a vote by threatening exit. To calculate the power of an individual party, the Banzhaf measure determines, of all the potential coalitions the party could serve on, the number of times that party would be swing—or could change the outcome of a referendum (Banzhaf III 1964). Power measures differ from simply accounting for relative seat share because a party’s ability to form winning coalitions and threaten exit depends on the distribution of seats among other parties.

Any of our independent variables could be constructed using the simple seat share of each party or by instead using each party’s bargaining power index that captures how pivotal the party is likely to be in coalitions. We prioritized seat share measures in the body of the paper, but show robustness to using parties’ Banzhaf power indices here. We do this for three main reasons. First, seat shares are more common, easier to construct and more straightforward to interpret. Second, as our theory encompasses both electoral competition and legislative bargaining, we wanted to employ measures that apply to both arenas. Third, computing a competition measure using Banzhaf power indices empirically captures much less variation than a seat share HHI, because it assigns all councils with a majority party a value of 1 whereas the HHI index discriminates between majority parties of different sizes. Using seat shares rather than power indices to measure legislative bargaining power would be problematic if there were a highly non-linear relationship between the two, but plotting the measures against each other reveals a linear relationship. Additionally, the measures are highly correlated (as also confirmed by (Kline 2009)), suggesting that they measure similar concepts. Perhaps not surprisingly, we find substantively indistinguishable results when we check robustness to these alternate measures of political competition.

Table A.4: Effect of Change in Banzhaf Index (2004-2009) on Change in Public Goods Index (2008-2013)

	(1)	(2)	(3)	(4)	(5)
Difference in Banzhaf Index (2009-2004)	0.075 (0.049)	0.077 (0.050)	0.070 (0.049)	0.065 (0.047)	0.185 ⁺ (0.095)
Public Goods Index (2008)	-0.210*** (0.045)	-0.210*** (0.045)	-0.230*** (0.050)	-0.224*** (0.047)	-0.244*** (0.050)
Difference in Volatility (2009-2004)		0.034 (0.056)	0.048 (0.058)	0.045 (0.055)	0.076 (0.061)
Difference in Logged Population (2009-1998)			0.050 (0.055)	0.099 (0.060)	0.055 (0.054)
Kilometers of Paved Roads 2008			0.000 (0.000)		0.000 (0.000)
Number of Sources of National Electricity 2008			0.126* (0.054)		0.119* (0.052)
NGO/Development Projects 2008			0.002 (0.005)		0.002 (0.005)
Change in Km of Paved Roads (2013-2008)				0.000** (0.000)	
Change, Sources of Electricity (2013-2008)				0.153* (0.064)	
Change in NGO/Dev. Projects (2008-2013)				0.014** (0.005)	
Majority Party					-0.103 ⁺ (0.055)
Majority Party × Difference in Banzhaf Index					-0.095 (0.134)
Constant	0.003 (0.030)	0.008 (0.032)	-0.040 (0.052)	-0.062 (0.042)	0.012 (0.062)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.5: Effect of Change in Margin of Banzhaf Scores of Top Two Parties (2004-2009) on Change in Public Goods Index (2008-2013)

	(1)	(2)	(3)	(4)	(5)
Difference in Banzhaf Margin (2009-2004)	0.073 ⁺ (0.038)	0.075 ⁺ (0.038)	0.069 ⁺ (0.037)	0.062 ⁺ (0.037)	0.140* (0.063)
Public Goods Index (2008)	-0.216*** (0.046)	-0.215*** (0.046)	-0.235*** (0.051)	-0.230*** (0.048)	-0.244*** (0.051)
Difference in Volatility (2009-2004)		0.048 (0.066)	0.064 (0.067)	0.056 (0.064)	0.085 (0.069)
Difference in Logged Population (2009-1998)			0.082 (0.065)	0.132 ⁺ (0.067)	0.082 (0.064)
Kilometers of Paved Roads 2008			-0.000 (0.000)		0.000 (0.000)
Number of Sources of National Electricity 2008			0.124* (0.055)		0.119* (0.054)
NGO/Development Projects 2008			0.002 (0.005)		0.002 (0.005)
Change in Km of Paved Roads (2013-2008)				0.000** (0.000)	
Change, Sources of Electricity (2013-2008)				0.158* (0.066)	
Change in NGO/Dev. Projects (2008-2013)				0.014** (0.005)	
Majority Party					-0.076 (0.051)
Majority Party × Difference in Banzhaf Margin					-0.090 (0.099)
Constant	0.011 (0.031)	0.017 (0.034)	-0.039 (0.053)	-0.064 (0.045)	0.003 (0.061)
Observations	633	631	631	631	631

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.6: Effect of Change in Standard Deviation of Banzhaf Index (2004-2009) on Change in Public Goods Index (2008-2013)

	(1)	(2)	(3)	(4)	(5)
Difference in Banzhaf SD (2009-2004)	0.152*	0.155*	0.144*	0.124*	0.320**
	(0.063)	(0.063)	(0.062)	(0.060)	(0.115)
Public Goods Index (2008)	-0.216***	-0.215***	-0.236***	-0.230***	-0.247***
	(0.046)	(0.046)	(0.051)	(0.048)	(0.052)
Difference in Volatility (2009-2004)		0.051	0.067	0.058	0.093
		(0.065)	(0.066)	(0.064)	(0.069)
Difference in Logged Population (2009-1998)			0.077	0.128 ⁺	0.073
			(0.065)	(0.067)	(0.064)
Kilometers of Paved Roads 2008			-0.000		0.000
			(0.000)		(0.000)
Number of Sources of National Electricity 2008			0.123*		0.118*
			(0.055)		(0.054)
NGO/Development Projects 2008			0.002		0.002
			(0.005)		(0.005)
Change in Km of Paved Roads (2013-2008)				0.001**	
				(0.000)	
Change, Sources of Electricity (2013-2008)				0.156*	
				(0.065)	
Change in NGO/Dev. Projects (2008-2013)				0.014**	
				(0.005)	
Majority Party					-0.082
					(0.053)
Majority Party × Difference in Banzhaf SD					-0.246
					(0.158)
Constant	0.012	0.020	-0.036	-0.061	0.015
	(0.031)	(0.034)	(0.053)	(0.045)	(0.062)
Observations	633	631	631	631	631

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

One potential criticism of using the margin of victory is that it only takes into account the top two parties; in a system of proportional representation, the number of parties competing may also play a role. For example, with more parties competing, any given margin of victory may prove more powerful for legislative bargaining, since it may be easier to build a coalition with small and thus easily persuadable parties. We accordingly also estimate a specification in which we multiply the margin of victory in each year by the total number of parties competing; these results are shown in Appendix Table A.7, which similarly reveals a negative and statistically significant relationship between political competition and public goods provision. One again, this is evidence of a modest but robust decrease in the quantity of public goods provided by commune governments due to greater electoral competition.

Table A.7: Effect of Change in Margin of Victory Multiplied by Number of Parties Competing (2004-2009) on Change in Public Goods Index (2008-2013)

	(1)	(2)	(3)	(4)	(5)
Difference in Margin \times No. Parties	0.036*	0.037*	0.037*	0.029 ⁺	0.059*
	(0.015)	(0.015)	(0.014)	(0.015)	(0.029)
Public Goods Index (2008)	-0.213***	-0.213***	-0.233***	-0.226***	-0.242***
	(0.046)	(0.045)	(0.050)	(0.047)	(0.051)
Difference in Volatility (2009-2004)		0.038	0.053	0.047	0.070
		(0.059)	(0.060)	(0.057)	(0.062)
Difference in Logged Population (2009-1998)			0.052	0.103 ⁺	0.063
			(0.054)	(0.059)	(0.055)
Kilometers of Paved Roads 2008			0.000		0.000
			(0.000)		(0.000)
Number of Sources of National Electricity 2008			0.128*		0.125*
			(0.052)		(0.051)
NGO/Development Projects 2008			0.002		0.002
			(0.005)		(0.005)
Change in Km of Paved Roads (2013-2008)				0.000**	
				(0.000)	
Change, Sources of Electricity (2013-2008)				0.151*	
				(0.065)	
Change in NGO/Dev. Projects (2008-2013)				0.014**	
				(0.005)	
Majority Party					-0.068 ⁺
					(0.036)
Majority Party \times Difference in Margin \times No. Parties					-0.027
					(0.033)
Constant	-0.004	0.001	-0.047	-0.068	-0.021
	(0.030)	(0.032)	(0.051)	(0.042)	(0.054)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

While conceptually similar to our margin of victory measure of political competition, we can operationalize the concept of total dispersion of party strength on the council by taking the *Standard Deviation* (SD) of the seat shares of all parties on the council. As expected, there is more variation in the SD measure because it takes more than the shares of the top two parties into account. However, using this measure of political competition yields similar results (the p-value = 0.08 in our baseline specification of column 4), as shown in Appendix Table A.8.

Table A.8: Effect of Change in Standard Deviation of Seat Shares (2004-2009) on Change in Public Goods Index (2008-2013)

	(1)	(2)	(3)	(4)	(5)
Difference in SD Seat Shares (2009-2004)	0.343 ⁺ (0.201)	0.357 ⁺ (0.202)	0.350 ⁺ (0.195)	0.271 (0.204)	1.017* (0.415)
Public Goods Index (2008)	-0.210*** (0.045)	-0.210*** (0.045)	-0.231*** (0.050)	-0.224*** (0.047)	-0.237*** (0.051)
Difference in Volatility (2009-2004)		0.031 (0.058)	0.046 (0.060)	0.042 (0.057)	0.061 (0.062)
Difference in Logged Population (2009-1998)			0.049 (0.054)	0.100 (0.060)	0.056 (0.055)
Kilometers of Paved Roads 2008			0.000 (0.000)		0.000 (0.000)
Number of Sources of National Electricity 2008			0.128* (0.053)		0.117* (0.052)
NGO/Development Projects 2008			0.002 (0.005)		0.002 (0.005)
Change in Km of Paved Roads (2013-2008)				0.000** (0.000)	
Change, Sources of Electricity (2013-2008)				0.152* (0.065)	
Change in NGO/Dev. Projects (2008-2013)				0.014** (0.005)	
Majority Party					-0.064 ⁺ (0.038)
Majority Party × Difference in SD Seat Shares					-0.910 ⁺ (0.469)
Constant	-0.001 (0.030)	0.004 (0.032)	-0.044 (0.051)	-0.066 (0.042)	-0.010 (0.054)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C.4 Measuring Public Goods Provision Using a Principal Components Index

Table A.9: Effect of Change in Political Competition (2004-2009) on Change in Public Goods Index, PCA (2008-2013)

	(1)	(2)	(3)	(4)	(5)
Panel A: HHI measure					
Difference in HHI (2009-2004)	0.298 ⁺ (0.171)	0.331 ⁺ (0.176)	0.299 ⁺ (0.176)	0.318 ⁺ (0.177)	0.764* (0.362)
Public Goods Index, PCA, 2008 (4 items)	-0.209*** (0.045)	-0.209*** (0.045)	-0.225*** (0.047)	-0.223*** (0.045)	-0.233*** (0.048)
Difference in Volatility (2009-2004)		0.093 (0.122)	0.112 (0.127)	0.122 (0.113)	0.156 (0.131)
Difference in Logged Population (2009-1998)			-0.003 (0.139)	0.077 (0.131)	0.005 (0.141)
Kilometers of Paved Roads 2008			0.000 (0.001)		0.000 (0.001)
Number of Sources of National Electricity 2008			0.222* (0.090)		0.210* (0.090)
NGO/Development Projects 2008			0.000 (0.009)		-0.000 (0.009)
Change in Km of Paved Roads (2013-2008)				0.001*** (0.000)	
Change, Sources of Electricity (2013-2008)				0.289* (0.119)	
Change in NGO/Dev. Projects (2008-2013)				0.028** (0.010)	
Majority Party					-0.110 (0.080)
Majority Party × Difference in HHI					-0.656 (0.441)
Constant	0.010 (0.055)	0.025 (0.057)	-0.012 (0.095)	-0.077 (0.079)	0.055 (0.107)

Table continued on next page...

	(1)	(2)	(3)	(4)	(5)
Panel B: Margin of victory measure					
Difference in Margin (2009-2004)	0.276*	0.298*	0.287*	0.254*	0.665*
	(0.116)	(0.118)	(0.116)	(0.118)	(0.256)
Public Goods Index, PCA, 2008 (4 items)	-0.210***	-0.209***	-0.225***	-0.223***	-0.232***
	(0.045)	(0.045)	(0.047)	(0.045)	(0.048)
Difference in Volatility (2009-2004)		0.104	0.125	0.127	0.174
		(0.124)	(0.129)	(0.117)	(0.136)
Difference in Logged Population (2009-1998)			0.005	0.086	0.014
			(0.139)	(0.130)	(0.139)
Kilometers of Paved Roads 2008			0.000		0.000
			(0.001)		(0.001)
Number of Sources of National Electricity 2008			0.224*		0.217*
			(0.089)		(0.088)
NGO/Development Projects 2008			0.000		-0.000
			(0.009)		(0.009)
Change in Km of Paved Roads (2013-2008)				0.001***	
				(0.000)	
Change, Sources of Electricity (2013-2008)				0.290*	
				(0.119)	
Change in NGO/Dev. Projects (2008-2013)				0.027**	
				(0.010)	
Majority Party					-0.108
					(0.077)
Majority Party × Difference in Margin					-0.572 ⁺
					(0.321)
Constant	0.009	0.025	-0.013	-0.080	0.052
	(0.055)	(0.057)	(0.093)	(0.076)	(0.103)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Index is the first principal component from a principal components analysis with our four public goods.

C.5 Placebo Tests: National Paved Roads and Electricity

Table A.10: Placebo Test: Effect of Change in Political Competition (2004-2009) on Change in Kilometers of Paved Roads and Number of Sources of National Electricity (2008-2013)

	(1)	(2)	(3)	(4)
Panel A: HHI measure, change in km of paved roads				
Difference in Competition, HHI (2009-2004)	-15.530 (18.471)	-22.853 (24.076)	-23.629 (23.954)	-48.350 (41.535)
Kilometers of Paved Roads 2008	0.067 (0.050)	0.061 (0.048)	0.060 (0.049)	0.057 (0.047)
Difference in Volatility (2009-2004)		-24.870 (20.669)	-24.675 (20.261)	-25.668 (21.250)
Difference in Logged Population (2009-1998)			15.310 (11.373)	16.104 (11.355)
Majority Party				-0.673 (3.473)
Majority Party \times Difference in HHI				45.790 (32.145)
Constant	19.078*** (4.998)	15.617*** (2.973)	10.275* (3.856)	9.108+ (4.957)
Panel B: Margin of victory measure, change in km of paved roads				
Difference in Competition, Margin (2009-2004)	7.079 (5.619)	2.758 (6.338)	2.802 (6.333)	5.455 (11.236)
Kilometers of Paved Roads 2008	0.066 (0.050)	0.061 (0.048)	0.059 (0.049)	0.059 (0.050)
Difference in Volatility (2009-2004)		-21.949 (18.735)	-21.673 (18.316)	-20.509 (17.492)
Difference in Logged Population (2009-1998)			14.768 (11.536)	15.275 (11.503)
Majority Party				-4.376 (2.841)
Majority Party \times Difference in Margin				-1.175 (16.742)
Constant	19.781*** (5.514)	16.805*** (3.555)	11.689** (3.530)	13.454*** (3.741)

Table continued on next page...

Panel C: HHI measure, national electricity sources

Difference in Competition, HHI (2009-2004)	0.103 (0.078)	0.091 (0.080)	0.090 (0.080)	0.172 (0.148)
Number of Sources of National Electricity 2008	-0.360*** (0.046)	-0.363*** (0.046)	-0.368*** (0.046)	-0.375*** (0.047)
Difference in Volatility (2009-2004)		-0.045 (0.056)	-0.045 (0.056)	-0.026 (0.057)
Difference in Logged Population (2009-1998)			0.048 (0.054)	0.056 (0.053)
Majority Party				-0.068* (0.029)
Majority Party \times Difference in HHI				-0.042 (0.163)
Constant	0.085*** (0.014)	0.079*** (0.015)	0.063** (0.022)	0.093** (0.027)

Panel D: Margin of victory measure, national electricity sources

Difference in Competition, Margin (2009-2004)	0.037 (0.045)	0.028 (0.047)	0.028 (0.047)	0.025 (0.090)
Number of Sources of National Electricity 2008	-0.358*** (0.045)	-0.361*** (0.045)	-0.366*** (0.046)	-0.370*** (0.046)
Difference in Volatility (2009-2004)		-0.050 (0.056)	-0.050 (0.056)	-0.037 (0.057)
Difference in Logged Population (2009-1998)			0.049 (0.054)	0.059 (0.052)
Majority Party				-0.059* (0.027)
Majority Party \times Difference in Margin				0.053 (0.103)
Constant	0.082*** (0.013)	0.076*** (0.015)	0.060** (0.021)	0.081** (0.025)
Observations	664	660	660	660

OLS models with standard errors clustered at the circle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.6 Falsification Test: Pre-treatment Changes in Public Goods

Table A.11: Effect of Change in HHI (2004-2009) on Change in Public Goods Index (2003-2006)

	(1)	(2)	(3)	(4)	(5)
Difference in HHI (2009-2004)	-0.065 (0.134)	-0.039 (0.133)	-0.058 (0.133)	-0.058 (0.135)	0.092 (0.234)
Public Goods Index (2008)	-0.019 (0.052)	-0.020 (0.052)	-0.005 (0.050)	-0.025 (0.057)	-0.011 (0.056)
Difference in Volatility (2009-2004)		0.077 (0.087)	0.062 (0.087)	0.078 (0.088)	0.078 (0.095)
Difference in Logged Population (2009-1998)			0.446*** (0.101)	0.413*** (0.096)	0.450*** (0.103)
Kilometers of Paved Roads 2008			-0.000 (0.000)		-0.000 (0.000)
Number of Sources of National Electricity 2008			-0.070 (0.091)		-0.074 (0.092)
NGO/Development Projects 2008			-0.012 ⁺ (0.006)		-0.012 ⁺ (0.006)
Change in Km of Paved Roads (2013-2008)				-0.000 (0.000)	
Change, Sources of Electricity (2013-2008)				-0.050 (0.129)	
Change in NGO/Dev. Projects (2008-2013)				-0.001 (0.005)	
Majority Party					-0.044 (0.078)
Majority Party × Difference in HHI (2009-2004)					-0.198 (0.302)
Constant	-0.002 (0.040)	0.011 (0.042)	-0.066 (0.067)	-0.129* (0.061)	-0.042 (0.082)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.12: Effect of Change in Margin of Victory (2004-2009) on Change in Public Goods Index (2003-2006)

	(1)	(2)	(3)	(4)	(5)
Difference in Margin (2009-2004)	-0.133 (0.098)	-0.118 (0.101)	-0.116 (0.101)	-0.113 (0.102)	-0.008 (0.174)
Public Goods Index (2008)	-0.017 (0.052)	-0.018 (0.052)	-0.003 (0.050)	-0.023 (0.057)	-0.007 (0.055)
Difference in Volatility (2009-2004)		0.063 (0.091)	0.050 (0.090)	0.067 (0.090)	0.064 (0.100)
Difference in Logged Population (2009-1998)			0.443*** (0.101)	0.411*** (0.095)	0.446*** (0.103)
Kilometers of Paved Roads 2008			-0.000 (0.000)		-0.000 (0.000)
Number of Sources of National Electricity 2008			-0.069 (0.092)		-0.071 (0.092)
NGO/Development Projects 2008			-0.012* (0.006)		-0.012* (0.006)
Change in Km of Paved Roads (2013-2008)				-0.000 (0.000)	
Change, Sources of Electricity (2013-2008)				-0.051 (0.130)	
Change in NGO/Dev. Projects (2008-2013)				-0.001 (0.005)	
Majority Party					-0.033 (0.075)
Majority Party × Difference in Margin (2009-2004)					-0.162 (0.234)
Constant	-0.004 (0.040)	0.006 (0.041)	-0.068 (0.067)	-0.132* (0.060)	-0.049 (0.082)
Observations	664	660	660	660	660

OLS models with standard errors clustered at the circle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C.7 Impacts of Political Competition, by Preference Fractionalization

In the below tables, we examine the observable implication that policy consensus on the demand side could moderate the extent of bargaining inefficiencies. In particular, where there is greater consensus over policy, we should expect a smaller negative relationship between political competition and public goods provision than where there is greater preference fractionalization. We construct an index of preference fractionalization using geo-coded data from the 232 communes in which Afrobarometer surveys were conducted prior to 2009.⁴⁵ First, we count the number of people per commune who listed each public good as one of three priorities they thought the government should address. Then, we use the same measurement strategy used **in other contexts** to create ethnolinguistic fractionalization measures and take 1 minus the sum of squared shares of **the time that** people report each good. Importantly, preference fractionalization is not significantly correlated with levels or changes in competition. Controlling for preference fractionalization also does not reduce the relationship between our independent variables of interest and dependent variable (columns 3 and 4 of Table A.13). This suggests that the demand side is not likely a principal driver of political competitiveness. However, it does appear that the demand side could help account for one of the mechanisms through which political competition leads to bargaining inefficiencies or muted public goods provision. Interacting preference fractionalization with the independent variable of interest yields a positive and significant coefficient on the interaction term (columns 5 and 6 of Table A.13).

⁴⁵Columns 1 & 2 of Table A.13 show that the magnitude of the effect of political competition on public goods provision is approximately the same in this sample, though it is no longer statistically significant due to reduced power.

Table A.13: Effect of Change in Herfindahl Index (2004-2009) on Change in Public Goods Index (2008-2013), by Preference Fractionalization

	(1)	(2)	(3)	(4)	(5)	(6)
Difference in HHI (2009-2004)	0.258 (0.246)		0.260 (0.244)		-9.558* (4.677)	
Difference in Margin (2009-2004)		0.267 (0.175)		0.277 (0.174)		-5.058+ (2.653)
Preference Fractionalization			1.717* (0.653)	1.742* (0.670)	2.066** (0.763)	1.920** (0.685)
Difference in HHI (2009-2004) × Preference Fractionalization					12.738* (6.222)	
Difference in Margin (2009-2004) × Preference Fractionalization						6.923+ (3.533)
Difference in Volatility (2009-2004)	0.124 (0.131)	0.125 (0.128)	0.105 (0.131)	0.107 (0.128)	0.088 (0.130)	0.090 (0.132)
Difference in Logged Population (2009-1998)	-0.067 (0.149)	-0.058 (0.152)	-0.083 (0.154)	-0.074 (0.158)	-0.074 (0.156)	-0.045 (0.167)
Kilometers of Paved Roads 2008	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Number of Sources of National Electricity 2008	0.188+ (0.094)	0.191* (0.094)	0.179+ (0.091)	0.182+ (0.090)	0.161+ (0.092)	0.165+ (0.091)
NGO/Development Projects 2008	-0.005 (0.005)	-0.005 (0.005)	-0.004 (0.006)	-0.004 (0.006)	-0.003 (0.006)	-0.003 (0.006)
Public Goods Index (2008)	-0.221** (0.071)	-0.222** (0.071)	-0.222** (0.070)	-0.223** (0.070)	-0.221** (0.069)	-0.224** (0.069)
Constant	0.146+ (0.076)	0.142+ (0.075)	-1.173* (0.476)	-1.197* (0.489)	-1.448* (0.568)	-1.346* (0.510)
Observations	231	231	231	231	231	231

OLS models with standard errors clustered at the cercle level. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C.8 Impacts of Political Competition on Individual Public Goods

Table A.14: Effect of Change in Political Competition (2004-2009) on Change in Public Goods (2008-2013)

	Boreholes	Clinics	Roads	Schools
Panel A: HHI measure				
Difference in HHI (2009-2004)	0.218 (0.176)	0.399 ⁺ (0.210)	0.203 (0.195)	-0.016 (0.145)
Observations	660			
Panel B: HHI measure, majority party interaction				
Difference in HHI (2009-2004)	0.611* (0.280)	0.693** (0.258)	0.319 (0.316)	0.306 (0.249)
Majority Party	-0.093 (0.059)	-0.145* (0.061)	-0.014 (0.087)	-0.152* (0.071)
Majority Party × Difference in HHI (2009-2004)	-0.562 (0.418)	-0.296 (0.320)	-0.186 (0.343)	-0.322 (0.359)
Observations	660			
Panel C: Margin of victory measure				
Difference in Margin (2009-2004)	0.206* (0.095)	0.356** (0.130)	0.077 (0.130)	0.067 (0.100)
Observations	660			
Panel D: Margin of victory measure, majority party interaction				
Difference in Margin (2009-2004)	0.597*** (0.161)	0.512* (0.203)	0.204 (0.228)	0.146 (0.153)
Majority Party	-0.095 (0.061)	-0.137* (0.061)	-0.005 (0.087)	-0.147* (0.069)
Majority Party × Difference in Margin (2009-2004)	-0.607* (0.266)	-0.165 (0.253)	-0.219 (0.246)	-0.012 (0.209)
Observations	660			

Pooled seemingly unrelated regression analyses with standard errors clustered at the circle level.

Controls from column 3 of Table 1 included in all models. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C.9 Changes in Public Goods Provision Given Changes in Expenditures, by Level of Political Competition

Table A.15: Effect of Borehole Expenditures (2006-08) on Boreholes Built (2006-08) By Level of Political Competition

	Full Sample	No majority	Majority	Full Sample	No majority	Majority
Borehole Expenditures (2006-08)	-0.006*	-0.007*	-0.013	-0.001	-0.001	-0.002
	(0.002)	(0.003)	(0.015)	(0.001)	(0.001)	(0.009)
HHI (2004)	-0.111	0.247	-0.311			
	(0.263)	(0.387)	(0.625)			
Borehole Expenditures (2006-08) × HHI (2004)	0.018*	0.021*	0.027			
	(0.007)	(0.008)	(0.021)			
Logged Population (1998)	-0.628***	-0.647**	-0.541*	-0.655***	-0.677**	-0.577**
	(0.154)	(0.188)	(0.197)	(0.155)	(0.200)	(0.207)
Margin (2004)				-0.102	0.065	-0.091
				(0.181)	(0.297)	(0.346)
Borehole Expenditures (2006-08) × Margin (2004)				0.007	0.015*	0.007
				(0.008)	(0.007)	(0.013)
Constant	5.895***	5.983**	5.162**	6.058***	6.255**	5.356**
	(1.404)	(1.678)	(1.676)	(1.378)	(1.766)	(1.799)
Observations	172	107	65	172	107	65

OLS models with region fixed effects and standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.16: Effect of Clinic Expenditures (2006-08) on Clinics Built (2006-08) By Level of Political Competition

	Full Sample	No majority	Majority	Full Sample	No majority	Majority
Clinic Expenditures (2006-08)	-0.001 (0.004)	-0.003 (0.007)	0.020 (0.014)	0.000 (0.003)	0.001 (0.003)	0.009 (0.008)
HHI (2004)	0.480 (0.507)	1.269 (0.799)	0.268 (1.183)			
Clinic Expenditures (2006-08) × HHI (2004)	0.007 (0.009)	0.005 (0.017)	-0.034 (0.031)			
Logged Population (1998)	-0.592*** (0.141)	-0.715*** (0.178)	-0.286 ⁺ (0.148)	-0.611*** (0.151)	-0.742*** (0.183)	-0.319 ⁺ (0.173)
Margin (2004)				0.299 (0.483)	1.558 (1.060)	-0.309 (0.658)
Clinic Expenditures (2006-08) × Margin (2004)				0.006 (0.008)	-0.010 (0.017)	-0.013 (0.022)
Constant	4.946*** (1.099)	5.804*** (1.471)	2.599* (1.231)	5.231*** (1.231)	6.146*** (1.567)	3.056 ⁺ (1.506)
Observations	133	86	47	133	86	47

OLS models with region fixed effects and standard errors clustered at the cercle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.17: Effect of School Expenditures (2006-08) on Schools Built (2006-08) By Level of Political Competition

	Full Sample	No majority	Majority	Full Sample	No majority	Majority
School Expenditures (2006-08)	-0.001 (0.003)	-0.000 (0.003)	-0.011 ⁺ (0.006)	-0.000 (0.001)	-0.001 (0.001)	0.000 (0.003)
HHI (2004)	-0.013 (0.331)	-0.200 (0.402)	-0.344 (0.504)			
School Expenditures (2006-08) × HHI (2004)	0.005 (0.006)	0.003 (0.008)	0.024* (0.012)			
Logged Population (1998)	-0.905*** (0.097)	-0.948*** (0.131)	-0.781*** (0.128)	-0.909*** (0.097)	-0.956*** (0.131)	-0.810*** (0.131)
Margin (2004)				-0.071 (0.221)	-0.497 (0.341)	0.222 (0.209)
School Expenditures (2006-08) × Margin (2004)				0.005 (0.004)	0.010 ⁺ (0.005)	0.002 (0.006)
Constant	8.191*** (0.905)	8.615*** (1.235)	7.391*** (1.153)	8.241*** (0.895)	8.710*** (1.225)	7.400*** (1.085)
Observations	424	274	150	424	274	150

OLS models with region fixed effects and standard errors clustered at the circle level. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D A Test of Generalizability Using Cross-Country Data

Table A.18: List of Countries by Level of Party System Institutionalization

Low party system institutionalization	High party system institutionalization
Afghanistan*	Albania
Algeria	Argentina
Angola	Australia**
Armenia*	Austria
Azerbaijan	Bangladesh
Belarus	Barbados
Benin*	Belgium
Bhutan	Bolivia
Burkina Faso*	Bosnia and Herzegovina***
Burundi	Botswana
Cambodia*	Brazil
Cameroon	Bulgaria
Cent. Af. Rep.	C. Verde Is.
Chad*	Canada
Colombia	Chile
Comoro Is.*	Croatia
Congo	Cyprus
Congo (DRC)	Czech Rep.
Costa Rica	Denmark
Cote d'Ivoire*	El Salvador
Cuba*	Estonia
Djibouti*	FRG/Germany
Dom. Rep.	Fiji
Ecuador	Finland
Egypt	France
Eq. Guinea	Gambia
Eritrea*	Georgia
Ethiopia	Greece
Gabon*	Guyana*
Ghana	Honduras*
Guatemala	Hungary
Guinea*	Iceland
Guinea-Bissau	India
Haiti*	Indonesia
Iran	Ireland
Iraq*	Israel
Jordan	Italy
Kazakhstan	Jamaica
Kuwait	Japan
Kyrgyzstan	Kenya
Laos*	Latvia
Lesotho	Lebanon
Liberia	Lithuania
Libya*	Macedonia*
Madagascar	Malaysia
Malawi	Mauritius
Maldives	Mexico
Mali*	Mongolia

Table continued on next page...

Low party system institutionalization	High party system institutionalization
Mauritania*	Myanmar
Moldova	Namibia
Morocco	Netherlands
Mozambique	New Zealand
Nepal	Nicaragua*
Niger*	Norway
Nigeria	PRC
Oman	Pakistan
P. N. Guinea	Poland
PRK*	Portugal**
Panama	ROK
Paraguay	Romania
Peru	Russia
Philippines	S. Africa
Qatar	Singapore**
Rwanda	Slovakia
Saudi Arabia*	Slovenia
Senegal*	Spain
Sierra Leone	Sri Lanka
Solomon Is.*	Suriname*
Somalia***	Sweden
South Sudan***	Switzerland
Sudan	Tajikistan*
Swaziland	Tanzania
Syria	Trinidad-Tobago
Thailand	Turkey
Timor-Leste*	Turkmenistan***
Togo*	UK**
Tunisia	USA**
Uganda	Uruguay
Ukraine	Uzbekistan*
Vanuatu	Venezuela
Yemen	Vietnam
Yemen (AR)	
Zambia	

Notes: We only list countries which appear in at least one of the four regressions (i.e. four outcomes) used to create Figure 5. * indicates a country not in the regression of education spending as a share of GDP (PPP) on the HHI and PSI. ** indicates a country not in the regression of the primary completion rate on the HHI and PSI. *** indicates a country only in the regression of the measles immunization rate on the HHI and PSI. All other countries appear in all four regressions.

Sources: WDI (2017), IFPRI (2017), and V-Dem (2018).

Table A.19: Summary Statistics in Cross-country Dataset by Level of Party System Institutionalization

	Low PSI Countries					High PSI Countries				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Dependent Variables										
Education spending share of GDP	966	3.56	2.13	0.00	16.22	1,849	3.87	2.30	0.16	13.95
Health spending share of GDP	930	1.62	1.20	0.00	7.87	1,820	3.14	2.61	0.02	12.08
Education spending per capita	966	254.30	519.72	0.06	4605.36	1,849	704.63	686.90	2.69	3138.02
Health spending per capita	930	127.65	309.21	0.02	2564.87	1,820	674.29	821.81	1.39	3696.89
Primary completion rate	1,472	67.94	26.79	6.27	185.30	1,600	91.34	15.63	13.52	122.32
Immunization rate (measles)	2,164	69.76	23.83	1.00	99.00	2,453	84.15	17.61	1.00	99.00
Independent Variables										
HHI	966	0.50	0.30	0.01	1.00	1,849	0.41	0.23	0.09	1.00
Population (100,000s)	966	213.19	259.86	1.19	1672.97	1,849	702.19	2034.87	2.28	13506.95
PSI Index	966	0.34	0.13	0.00	0.54	1,849	0.80	0.13	0.56	1.00
Transparency index	907	32.94	9.96	12.00	71.00	1,797	57.80	20.65	17.00	91.00

Notes: The first two rows are education and health expenditures as a share of GDP (PPP) (0-100) while the next two rows are total education and health expenditures per capita in constant 2005 USD. Primary completion rate is the number of new entrants in the last grade of primary education divided by the population at the entrance age for that grade. The immunization rate for measles is the percentage of children ages 12–23 months who have received at least one dose of the measles vaccine.

Sources: WDI (2017), IFPRI (2017), and V-Dem (2018).

Table A.20: Effect of HHI on Public Goods Provision by Party System Institutionalization

	(1)	(2)	(3)	(4)	(5)	(6)
	Education	Health	Education	Health	Primary	Immunization
	share GDP	share GDP	per capita	per capita	completion	(measles)
Panel A: By Party System Institutionalization (PSI)						
HHI	1.216**	0.947**	260.497***	224.670***	9.863***	6.109**
	(0.554)	(0.363)	(68.004)	(64.938)	(3.003)	(2.894)
HHI × high PSI	-2.078***	-1.630***	-270.844**	-305.474***	-11.443**	-4.644
	(0.738)	(0.531)	(116.932)	(105.521)	(5.554)	(4.320)
Observations	2815	2750	2815	2750	3072	4617
Panel B: By Party System Institutionalization (PSI) and Level of Corruption						
HHI	1.208**	0.940**	264.994***	228.040***	9.777***	6.225**
	(0.557)	(0.364)	(69.319)	(66.328)	(2.975)	(2.888)
HHI × high PSI, high corruption	-1.992***	-0.593	-96.366	-82.906	-7.712	-5.696
	(0.755)	(0.522)	(133.632)	(106.539)	(8.902)	(5.427)
HHI × high PSI, low corruption	-2.132**	-2.024***	-339.889**	-391.393***	-12.858**	-3.602
	(0.891)	(0.580)	(141.512)	(128.801)	(5.980)	(5.276)
Observations	2763	2698	2763	2698	3037	4559

Notes: OLS models with standard errors clustered at the country level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data for columns (1) – (6) are available for 1980–2012, data for column (7) are available for 1975–2015, and data for column (8) are available for 1980–2015. All specifications include country and year fixed effects, the initial period value of the outcome interacted with a linear time trend, and a control for population. The base group in both panels is low PSI. Columns (1) – (3) indicate total expenditures as a share of GDP (PPP) (0-100) while columns (4) – (6) indicate total expenditures per capita in constant 2005 USD. Primary completion rate is the number of new entrants in the last grade of primary education divided by the population at the entrance age for that grade. The immunization rate for measles is the percentage of children ages 12–23 months who have received at least one dose of the measles vaccine. *Sources:* WDI (2017), IFPRI (2017), and V-Dem (2018).

E Modeling the countervailing effects of competition on public goods

We have argued that, while political competition may increase the amount of resources that can potentially fund public goods (by reducing corruption and increasing policymaker effort via electoral incentives), it may simultaneously exacerbate the ease and stability of legislative bargains and thus make public spending less efficient. To make empirical predictions about when each of these forces will dominate, we develop a simple model of public goods provision that takes both into account. For tractability, we do not model the bargaining problem of councils; rather, we assume that political competition makes legislative bargaining more costly (as supported by literature discussed in the manuscript) and focus on the trade-offs between gains stemming from electoral incentives and bargaining costs. Into our model, we incorporate an additional feature of electoral competitiveness that is manifest in our empirical context and most other developing democracies, but excluded from many of the standard models of electoral accountability: that political competition may not be predicated on the provision of public goods, but rather—at least in part—on private transfers to citizens.

Consider the following stylized model that uses insights from existing models of political competition while further incorporating these two additional factors. A local politician (mayor) overseeing an elected local council is assumed to be motivated both by being in office and by personal benefits she can obtain through misappropriation of public funds.⁴⁶ The politician has a fixed budget B that incorporates both transfer funds from higher levels of government as well as the value of her time. She can allocate it across three investments: keeping it for herself (misappropriation of funds and/or reduction of effort), s ; providing it to voters in the form of direct, private transfers, t ; and investing it in public goods, p .

A production function translates investments into output. Both s and t have the feature

⁴⁶To make the model more tractable, we consider the politician as a unitary actor. Policymaking in our empirical case is a function of a council of actors, but for the purposes of the theoretical abstraction, we assume that the mayor bears all bargaining costs and behaves accordingly.

that output equals investment; that is, $O_s(s) = s$ and $O_t(t) = t$. However, investments in p require the politician to coordinate with some members of the local council to form a majority coalition, and such investments are accordingly subject to coordination inefficiencies, e.g. a complex process of coalition formation or unsustainable bargains. Specifically, $O_p(p) = \delta p$, where $\delta \in [0, 1]$ is a decreasing function of an exogenously determined level of political competition c —that is, $\delta = f(c)$. With more political competition, the same investment p thus results in fewer public goods, O_p .

Motivated by existing literature, we assume s and thus O_s is strictly decreasing in political competition c . The politician then allocates these additional resources across t and p so as to maximize voter utility and thus the likelihood of reelection. Voter utility is described by the function $U = g(O_t, O_p)$.

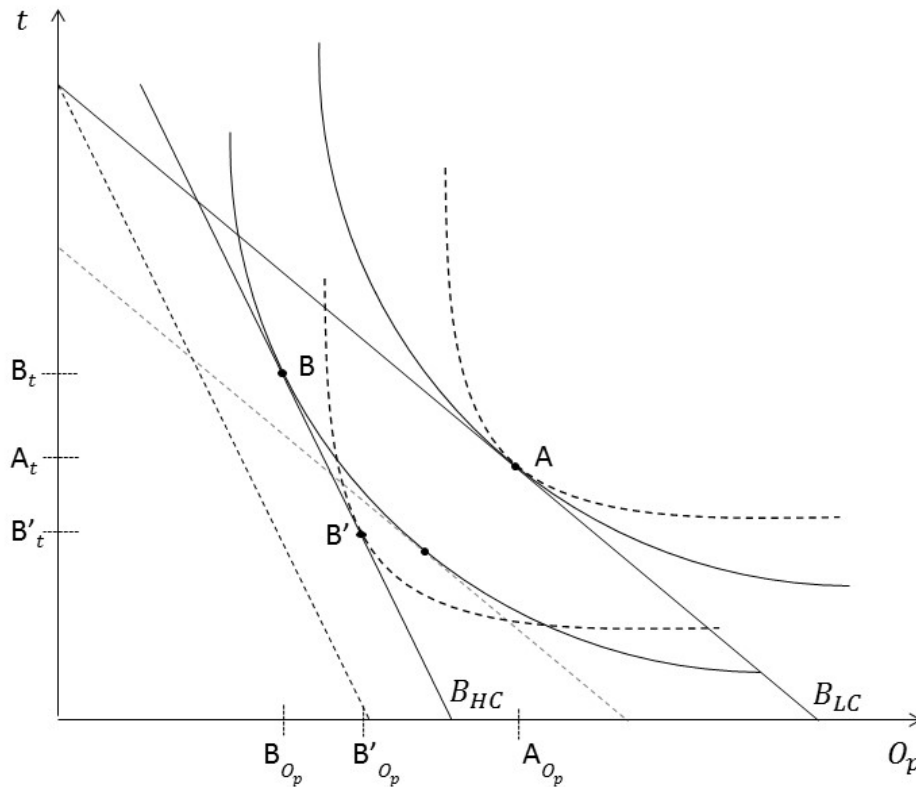
From the setup, it is clear that the politician will have some optimal allocation of $B - s$ over t and p . However, as political competition increases, δ decreases and thus investments in p become relatively less attractive, while at the same time s is decreasing and so $B - s$ is increasing. The speed with which δ decreases relative to s will determine whether increases in political competition lead to increases in O_t and/or in O_p ; this is an empirical question. However, the model yields several predictions:

P1 How increases in political competition c affect public goods provision O_p depends on the relative rate of change of δ and s . More precisely, as $\left| \frac{d\delta}{dc} \right|$ increases relative to $\left| \frac{ds}{dc} \right|$, increases in political competition are more likely to decrease O_p .

The comparative statics prediction regarding the relative rate of change of δ and s in *H1* is depicted graphically in Figure A.4. Here, we show the effect of an increase in competition on both O_p and O_t (i.e. t). The net effect on the budget constraint is represented by the move from B_{LC} to B_{HC} . In this example, the positive income effect produced by the decrease in s is swamped by the negative income and substitution effects produced by the decrease in δ . As a result, we see that the new budget's y -intercept indicates that the politician can now afford more private transfers t , but its x -intercept indicates that the politician can now

obtain fewer public goods, O_p . Of course, a greater decrease in s could move the budget line far enough rightward that both t and O_p are increased.

Figure A.4: Graphical representation of the effect of an increase in competition on public goods provision and private transfers



Note: The gray dotted line isolates the income effect of increasing δ while the black dotted line shows the combined income and substitution effects. The budget line B_{HC} has the same slope as the black dotted line, but has moved outward to represent the positive effect on income of decreasing s .

At a given level of c , s and δ , investments in private and public goods, t and p , are substitutes because they both enter positively into the politician's budget. However, the elasticity with which one good can be substituted for another depends on voter preferences. For instance, voters may place exactly equal weight on both goods such that a relative change in price leads to a complete substitution of the more expensive good for the less expensive

one. Or, voters may place greater weight on one, or have some minimum threshold of the good that needs to be met before they would substitute one for another.

Given this, even if O_p decreases with competition, the effect on t is ambiguous. Depending on the relationship between the income and substitution effects generated by a decrease in δ , several outcomes may obtain. First, even when an increase in c results in a decrease in O_p , a politician may sufficiently increase t (because t is now relatively more efficient, and substitutable) such that we observe increasing outputs of private transfers O_t and decreasing outputs of public goods O_p . Second, if private transfers and public goods are less substitutable, the negative income effect from decreasing δ can swamp the positive substitution effect such that a null or even negative effect on O_t obtains. That is, political competition may reduce provision of *both* public goods and private transfers. The extent to which outputs of private transfers and public goods are substitutable is another empirical question. This leads to a second prediction:

P2 The less substitutable are private transfers and public goods, the greater the possibility that an increase in c (and subsequent decrease in δ) could simultaneously decrease O_p and decrease (or have no effect on) t and O_t .

Figure A.4 demonstrates graphically how the nature of the relationship between the two goods can affect whether an increase in competition has a positive or negative effect on t as proposed in *H2*. The two sets of indifference curves represent more substitutable goods (solid lines) and less substitutable goods (dashed lines). Moving from point A (low competition) to point B (high competition), or from point A (low competition) to point B' (high competition), the effect on O_p is always negative. By contrast, in the case of the more substitutable goods, the effect of competition is positive ($B_t > A_t$); while in the case of the less substitutable goods, the effect of competition is negative ($B'_t < A_t$).