

# Political budget cycles and media freedom

(Forthcoming in ELECTORAL STUDIES)

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## 1 Country panel databases of recent studies of PBCs

**Table A1. Country panel databases**

<b>Paper</b>	<b>Countries</b>	<b>Period</b>	<b>Fiscal variables</b>
Persson & Tabellini (2003)	60 countries	1960-1998	Budget deficit and expenditure and revenue components
Brender & Drazen (2005)	68 democracies	1960-2001	Budget balance and total expenditures and revenues
Alt & Lassen (2006b)	19 OECD countries	1989-1998	Budget surplus
Shi & Svensson (2006)	85 countries	1975-1995	Budget balance
Chang (2008)	21 OECD countries	1973-2000	Expenditure components
Vergne (2009)	42 developing countries	1975-2001	Expenditure components
Efthyvoulou (2012)	27 EU member countries	1997-2008	Budget balance and expenditure and revenue components
Katsimi & Sarantides (2012)	19 OECD countries	1972-1999	Budget balance and expenditure and revenue components
Brender & Drazen (2013)	71 democracies	1972-2009	Index of a change in the (functional) composition of expenditure
Shelton (2014)	90 democracies	1980-2007	Budget surplus
This paper	69 democracies	1975-2010	Budget deficit and expenditure and revenue components

## 2 Descriptive statistics

**Table A2. Descriptive statistics**

Variable	Obs.	Mean	Std. Dev.	Min.	Max.	Description and Source
<b>Central Government fiscal variables (source: GFS – IMF)</b>						
CG1_gdp	961	29.72	9.07	11.03	50.97	Total revenue (%GDP)
CG11_gdp	954	18.87	5.58	7.09	32.84	Taxes (%GDP)
CG1111_gdp	779	5.29	3.12	0.26	11.94	Personal Income Taxes (%GDP)
CGexpenditure_gdp	961	31.76	9.59	11.50	63.84	Total expenditure (%GDP)
CG2_gdp	961	30.03	9.82	10.66	62.52	Expense (%GDP) (without consumption of fixed capital - CG23)
CG21_gdp	905	6.18	2.82	1.77	14.38	Compensation of Employees (%GDP)
CG31_gdp	961	1.73	1.20	0.32	10.98	Net acquisition of nonfinancial assets (%GDP) (with consumption of fixed capital)
CGdeficit_gdp	961	2.04	3.89	-18.55	31.33	Budget deficit (%GDP)
<b>Democracy (sources: Polity IV and Cheibub, et al. 2010)</b>						
Democracy_CGV	961	1.00	0.00	1.00	1.00	Democracy dummy (Cheibub et al. 2010)
New democ_CGV	961	0.41	0.49	0.00	1.00	New democracy (Cheibub et al. 2010)
Estab. Democ._CGV	961	0.59	0.49	0.00	1.00	Established democracy (Cheibub et al. 2010)
Democracy	886	1.00	0.06	0.00	1.00	Democracy dummy (Polity IV)
<b>Media freedom and diffusion (sources: Freedom House, CNTS, WDI)</b>						
IMD	884	1.29	0.87	0.00	4.21	Radios_pc*Free_Broadcast status
Radios_pc	961	0.67	0.41	0.03	2.10	Radios per capita (CNTS)
Radio&TV&Newspaper	961	0.42	0.23	0.02	1.08	Mean of radios, TVs and newspaper circulation per capita (CNTS)
Media freedom	884	77.18	12.00	12.00	95.00	Freedom Of the Press Score (Freedom House)
Internet_users_pc	577	0.25	0.28	0.00	0.93	Internet users per capita (WDI)
<b>Elections and type of system (source: DPI-World Bank)</b>						
Election_year	961	0.23	0.42	0.00	1.00	Election year for the government leader (President or Prime Minister)
Proportional	954	0.76	0.43	0.00	1.00	Proportional Representation dummy
Close election	961	0.57	0.50	0.00	1.00	Dummy for close elections (equals 1 if margin of victory smaller than 10 percentage points)
Predetermined_Election	961	0.74	0.44	0.00	1.00	Equals 1 when the election takes place in the last years of the constitutionally fixed term
<b>Macroeconomic and demographic variables (sources: WEO-IMF and WDI-World Bank)</b>						
Log(GDPpc 2005)	961	9.34	1.30	5.16	11.38	Log of GDP per capita (constant 2005 USD) WDI
Trade (% GDP)	961	80.33	44.42	12.01	333.53	Trade (% of GDP) - WDI
% Pop under 15	961	24.06	8.29	13.56	49.38	Population ages 0-14 (% of total) – WDI
% Pop above 65	961	11.38	4.61	2.12	20.55	Population ages 65 and above (% total) – WDI
Output gap	961	0.00	0.02	-0.09	0.09	Log(NGDP_R)-log(HPtrend of NGDP_R) - WEO

### 3 Construction of the public finance dataset

In order to construct our public finance dataset at the central government level, we retrieved all historical spending and revenue data available for all countries that have reported data to the IMF's Government Finance Statistics (GFS) yearbook for the 1975-2010 period, and then assembled comparable data series of expenditure and revenue, referring to Wickens (2002), who details the methodological differences between the two manuals.<sup>1</sup>

We here describe some of the key differences across the two methodologies and how we have attempted to deal with them. First, the way total expenditure and revenue are classified is different, particularly for the expenditure. For example, while we disaggregate expenditure following economic classifications, the exact definition of 'current' and 'capital' concepts are different between the manuals. Specifically, the capital expenditure concept under GFSM2001, denoted as 'net acquisition of non-financial assets' deducts the sales of fixed capital assets from the acquisition of such assets, while the concept under GFSM1986 does not. Further, while capital transfers are part of capital expenditure under GFSM1986, they are included as a current expenditure, denoted as 'expense', under GFSM2001. Acknowledging such differences in classifications (as clarified in Wickens (2002)), we have converted all of the available items under GFSM1986 into the concepts defined by GFSM2001, for not only the expenditure, but for revenue series as well.

Second, the two methodologies differ in terms of the way statistics are reported. In particular, while under GFSM1986, reporting is on a cash basis, under GFSM2001, it is, in principle, on an accrual basis.<sup>2</sup> This also presents some challenges. For example, the accrual concept of 'consumption of fixed

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<sup>1</sup> Disaggregated public spending and revenue datasets were assembled along the same lines by, respectively, Acosta-Ormaechea and Morozumi (2013, *IMF Working Paper 13/162*) and Acosta-Ormaechea and Yoo (2012, *IMF Working Paper 12/257*). The former focuses on the effects of the composition of spending on economic growth, while the latter studies the effects of tax composition. Our dataset combines spending and revenue components, including also budget deficits and a wide set of political, economic and institutional variables.

<sup>2</sup> This is 'in principle', because under GFSM2001, some reporting is still done following a cash basis.

capital', a subcomponent in 'expense' under GFSM2001, representing a decline in the value of government's fixed assets due to physical deterioration, obsolescence, or accidental damages, does not exist in the GFSM1986 cash system. This implies that capital spending concepts under GFSM1986 and GFSM2001 are still not consistent, with the former not deducting 'depreciation' of capital. To deal with this, for the data originally retrieved from GFSM2001, we move (i.e., add) consumption of fixed capital to the capital spending component, so that the modified capital spending component becomes comparable to the one from GFSM1986, i.e., without depreciation subtracted. However, in general, fundamental differences between the cash and accrual systems prevail, including the fact that the timing of reporting also differs.<sup>3</sup> Thus, it is important to acknowledge that the unification of the data series is not exact, but approximate, although the use of time dummies in our estimations partially help address issues due to the differences.

The budget deficit is obtained as a difference between total expenditure, a sum of the comparable current and capital components, and total revenue. Therefore, all the observations for the budget deficit in our dataset correspond to country-year pairs for which there is available data on current and capital expenditures and on total revenues. Regarding the latter, consistent total revenue series spanning GFSM1986 and GFSM2001 are constructed as follows: for the total revenue data series retrieved from GFSM1986, we exclude the revenue from sales of capital assets, to make it in line with the total revenue concept under GFSM2001. Note that obtaining the budget deficit as the difference between total expenditure and total revenue ensures that the government budget constraint is respected in our dataset, which, in turn, enables us to tie down a specific fiscal variable driving electoral budget cycles.

Last, a few comments on the institutional coverage of the government are in order. While this paper's focus is fiscal policy conduct at the central government (CG) level, it is possible to create

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<sup>3</sup> In the accrual system, flows are recorded at the time economic value is created, transferred, or extinguished, while with the cash basis, flows are recorded when cash is received or paid.

subsectors at this level of government, based on how the units are financed, i.e., by the legislative budgets or by extrabudgetary sources. In an attempt to maximize our sample size, we supplement consolidated CG data with budgetary CG (i.e., the CG unit based only on the legislative budget) data.<sup>4</sup>

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<sup>4</sup> Specifically, while we primarily use data at the consolidated CG level, we use budgetary CG data only when no single observation for the budget deficit is available for a country at the consolidated level for the entire 1975-2010 period. Importantly, being aware that differences between consolidated and budgetary CG data can be nontrivial, we never mix these data over time.

#### 4 Preliminary empirical analysis

We first estimate the unconditional electoral effects on fiscal variables. Table A3, using the System-GMM and the fixed effects (FE) methods, shows estimation results of equation (1) of the paper for total expenditure, total revenue, and the budget deficit (all as percentages of GDP). Those for System-GMM are the two-step results, using robust standard errors corrected for finite samples. T-statistics are presented in parentheses and the degree of statistical significance is signaled with asterisks. The number of instruments and the results of AR(1), AR(2), Hansen and difference-in-Hansen tests for System-GMM and the adjusted R-squared for FE are reported at the foot of the table. The first lag of the dependent variable (*L.CG\_gdp*) is always statistically significant, demonstrating that there is considerable persistence in all fiscal series.

The election dummy variable is always statistically significant, with the expected sign, regardless of the estimation method used. The most robust evidence of political budget cycles is for the budget deficit, for which the election dummy is highly statistically significant, both in System-GMM and FE estimations. Regarding the control variables, the log of GDP per capita at 2005 constant US dollars, trade as a percentage of GDP, and the percentage of population below 15 years of age are statistically significant in only one System-GMM estimation (column 5). They all seem to have a positive effect on deficits. The percentage of population above 65 years is never statistically significant. The output gap is statistically significant, with a positive sign, in columns 2 and 6, which indicates a positive effect on expenditure and deficits. Last, the decade dummy variables for the 1970s and 1980s are never statistically significant,<sup>5</sup> while the dummy for the 1990s is statistically significant, with a negative sign (in columns 2 and 6).<sup>6</sup>

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<sup>5</sup> This implies that expenditures, revenues and deficits in those decades were not significantly different from those of the 2000s, once we control for the other explanatory variables.

<sup>6</sup> This suggests that expenditures and deficits were smaller in the 1990s than in the 2000s.

**Table A3. Electoral effects for all democracies and elections**

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Expenditure		Total Revenue		Deficit	
	Sys-GMM	FE	Sys-GMM	FE	Sys-GMM	FE
L.CG_gdp	0.961*** (4.878)	0.812*** (18.138)	0.852*** (5.585)	0.795*** (27.861)	0.943*** (3.879)	0.719*** (9.729)
Election year	0.330* (1.676)	0.338** (2.521)	-0.203* (-1.733)	-0.216** (-2.129)	0.653*** (3.264)	0.529*** (3.634)
Log(GDPpc 2005)	3.499 (0.826)	-0.235 (-0.316)	0.645 (0.351)	0.338 (0.418)	9.491* (1.686)	-0.681 (-0.627)
Trade (% GDP)	0.025 (0.903)	-0.004 (-0.729)	0.001 (0.020)	-0.006 (-1.472)	0.194* (1.668)	0.001 (0.129)
% Pop under 15	0.449 (1.078)	0.002 (0.040)	0.100 (0.424)	-0.024 (-0.460)	1.124** (2.028)	0.029 (0.496)
% Pop over 65	-0.042 (-0.127)	0.086 (0.573)	0.232 (0.842)	0.132 (1.185)	-0.180 (-0.348)	-0.023 (-0.152)
Output gap	10.585 (0.614)	23.967*** (4.623)	4.685 (0.665)	4.272 (1.421)	-20.513 (-1.003)	17.558*** (2.820)
1970s	-1.097 (-0.483)	-0.568 (-1.198)	-0.207 (-0.360)	-0.116 (-0.397)	0.568 (0.252)	-0.524 (-0.976)
1980s	-0.587 (-0.407)	-0.427 (-1.015)	0.015 (0.032)	0.137 (0.576)	1.765 (0.889)	-0.475 (-0.898)
1990s	-0.254 (-0.355)	-0.624*** (-2.849)	0.169 (0.330)	0.076 (0.462)	1.762 (1.306)	-0.596** (-2.083)
Number of observations	961	961	961	961	961	961
Number of countries	69	69	69	69	69	69
Number of instruments	16.00		15.00		15.00	
Arellano-Bond AR(1), p-value	0.00		0.00		0.00	
Arellano-Bond AR(2), p-value	0.26		0.28		0.42	
Hansen (p-value)	0.27		0.96		0.70	
Diff Hansen 1 (p-value)	0.18		0.96		0.70	
Diff Hansen 2, (p-value)	0.38		0.92		0.25	
Adjusted R <sup>2</sup>		0.694		0.767		0.451

**Sources:** IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:**

- All elections in democracies (defined as in Cheibub et al. 2010). Sample period: 1975-2010.
- Estimated model (equation 1 of the paper):  $f_{it} = \sum_{j=1}^p \alpha_j f_{i,t-j} + \beta ELY_{it} + \mathbf{X}'_{it} \boldsymbol{\delta} + \mu_i + \varepsilon_{it}$
- Two-step results using robust standard errors corrected for finite samples are reported in System-GMM (Sys-GMM). Robust standard errors are used in Fixed Effects (FE) estimations.
- Log(GDPpc 2005), Trade (%GDP) and Output gap were treated as endogenous in the Sys-GMM estimations. Their lagged values (two periods) were used as instruments in the first-difference equations and their (once lagged) first-differences were used in the levels equation. The option collapse of the command xtabond2 for Stata was used in order to avoid a very high number of instruments. These variables were lagged one period in the FE estimations in order to avoid simultaneity/endogeneity problems.
- t-statistics in parenthesis. Significance level at which the null hypothesis is rejected: \*\*\*, 1%; \*\*, 5%, and \*, 10%.



We now consider the role of different conditioning factors in the creation of PBCs. Specifically, we first confirm that each of the five different conditional factors (mentioned in the paper) plays a role individually. For brevity, we focus on impacts of electoral effects on the budget deficits, and examine how different fiscal measures change under the key condition identified. To facilitate the comparison of relative importance of different factors, the following analyses are based on the observations for which all the factors are available. Because the freedom of broadcast index, a component of the index of media diffusion (IMD), is only available since 1979, and because there are missing values for some countries, the total number of observations drops to 884 (from 961 in Table A3).

To examine the role of conditioning factors individually, we estimate our baseline model of equation (1) of the paper for subsamples characterized by different political attributes. Table A4 reports the results, focusing on the coefficients and standard errors for the election year variable for brevity. There is robust evidence of PBCs when we restrict the sample to predetermined elections<sup>7</sup> (estimations 1 and 2), close elections<sup>8</sup> (5 and 6), low index of media diffusion (9 and 10), new democracies (13 and 14), and proportional representation electoral systems (17 and 18). Meanwhile, the evidence of PBCs is considerably weaker, or nonexistent, when elections are not predetermined (3 and 4), or not close (7 and 8), when the index of media diffusion is high (11 and 12), in established democracies (15 and 16), or in majoritarian electoral systems (19 and 20).<sup>9</sup>

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<sup>7</sup> This sub-sample includes the entire term preceding and including a predetermined election (the election year and the previous years of the same fixed term).

<sup>8</sup> This sub-sample includes the entire term preceding and including a close election (the election year and the previous years of the same term).

<sup>9</sup> Although the budget deficit is statistically significant in 4 estimations, it is only marginally significant in three of them (estimations 4, 7 and 11), and it is never significant for both System-GMM and FE.

**Table A4. Electoral effects on the deficit using sub samples**

	Predetermined		Not predetermined	
	SysGMM	FE	SysGMM	FE
	(1)	(2)	(3)	(4)
Election_year	0.627*** (3.241)	0.695*** (3.434)	0.268 (0.447)	0.353* (1.786)
Observations	652	652	232	232
Number of countries	63	63	44	44
	Close Elections		Not Closed Elections	
	SysGMM	FE	SysGMM	FE
	(5)	(6)	(7)	(8)
Election_year	0.716*** (2.853)	0.462** (2.271)	0.444* (1.856)	0.331 (1.463)
Observations	502	502	382	382
Number of countries	54	54	50	50
	Low Index of Media Diffusion		High Index of Media Diffusion	
	SysGMM	FE	SysGMM	FE
	(9)	(10)	(11)	(12)
Election_year	0.843*** (3.148)	0.880*** (3.730)	0.284* (1.661)	0.183 (1.143)
Observations	442	442	442	442
Number of countries	31	31	49	49
	New Democracies		Established Democracies	
	SysGMM	FE	SysGMM	FE
	(13)	(14)	(15)	(16)
Election_year	0.810** (2.403)	0.708** (2.202)	0.354 (1.374)	0.384** (2.279)
Observations	373	373	511	511
Number of countries	43	43	34	34
	Proportional		Majoritarian	
	SysGMM	FE	SysGMM	FE
	(17)	(18)	(19)	(20)
Election_year	0.566*** (2.693)	0.671*** (3.755)	-0.108 (-0.219)	0.222 (0.922)
Observations	574	574	310	310
Number of countries	42	42	29	29

Sources: IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:**

- See notes of Table A3.

- Estimated model (equation 1 of the paper):  $f_{it} = \sum_{j=1}^p \alpha_j f_{i,t-j} + \beta ELY_{it} + X'_{it} \delta + \mu_i + \varepsilon_{it}$

To complement the above analyses, we estimate equation (2) of the paper for the full sample, interacting each of the conditioning dummies with election-year dummies. The first and second columns of Table A5 summarize the results. For each conditioning factor, the results are largely consistent with the sub-sample analyses (Table A4). For instance, in the model where dummies for predetermined and non-predetermined elections are included, the significant electoral effects (on budget deficits) are observed only for predetermined elections. However, Wald tests indicate that only when the conditioning factor is the degree of information dissemination (i.e., IMD Low vs High) do the electoral effects differ significantly. Notice that this is already suggesting the particular importance of voters' informedness as a driver of PBCs.

Next, turning to the formal investigation of the relative importance of the conditioning factors, we estimate equation (2) of the paper for the five different sub-samples characterized by the five different political attributes (predetermined elections, close elections, low index of media diffusion, new democracies, and proportional electoral rules). Columns 3 to 12 of Table A5 present the results. While these are again generally consistent with the above findings, what is noticeable from the Wald test results in the third row is that the level of voters' information plays a key role in differentiating the electoral effects in many different sub-samples (including sub-samples characterized by predetermined elections, close elections, and proportional electoral rules, albeit only with Fixed effects estimators for the last subsample).<sup>10</sup> Although the predictability of elections, new democracies and proportional electoral systems also differentiate the effects in certain subsamples,<sup>11</sup> the role of voters' information appears to stand out.

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<sup>10</sup> This third row corresponds to the first row of Table 1 of the paper.

<sup>11</sup> It is worth noting that, in those cases, the Wald tests only marginally reject the hypotheses that the coefficients on the interaction variables are equal.

**Table A5. Electoral effects on the deficit under alternative political attributes**

	All elections		Sub-samples									
			Predetermined		Close Elections		IMD Low		New Democracies		Proportional	
	SysGMM	FE	SysGMM	SysGMM	SysGMM	SysGMM	FE	FE	FE	FE	SysGMM	FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Predetermined_Election*	0.819***	0.667***			0.662**	0.587**	1.056***	1.184***	0.968**	1.021**	0.795***	0.906***
Election_year	(3.224)	(3.262)			(2.468)	(2.357)	(2.708)	(3.673)	(2.428)	(2.671)	(3.009)	(3.943)
Not_Predetermin_Election*	0.327	0.180			1.006**	0.059	0.240	0.065	0.275	-0.372	-0.104	-0.148
Election_year	(0.961)	(0.773)			(2.443)	(0.174)	(0.724)	(0.320)	(0.431)	(-0.817)	(-0.168)	(-0.383)
Wald test, p-value	0.28	0.16			0.42	0.24	0.13	0.01	0.26	0.01	0.23	0.04
Close_election*	0.509	0.573***	0.745***	0.727***			1.079***	0.998***	1.004**	0.922**	0.152	0.636***
Election_year	(1.541)	(2.963)	(2.789)	(2.968)			(3.484)	(3.853)	(2.569)	(2.650)	(0.341)	(2.920)
Not_Close_election*	1.004**	0.501*	0.479	0.640**			0.496	0.748*	0.101	0.376	1.413*	0.706*
Election_year	(2.265)	(1.877)	(1.546)	(2.212)			(1.125)	(1.890)	(0.198)	(0.907)	(1.910)	(1.956)
Wald test, p-value	0.44	0.84	0.52	0.81			0.27	0.60	0.22	0.27	0.25	0.88
IMD_Low*Election_year	1.024***	0.973***	0.974**	1.230***	1.285***	1.053***			0.720*	0.887*	0.794**	1.256***
Election_year	(3.107)	(3.611)	(2.318)	(3.475)	(3.740)	(4.048)			(1.753)	(2.017)	(2.122)	(3.696)
IMD_High*Election_year	0.270*	0.149	0.156	0.233	0.305	-0.017			0.626	0.356	0.327	0.190
Election_year	(1.721)	(0.966)	(0.772)	(1.321)	(1.089)	(-0.065)			(1.018)	(0.940)	(1.642)	(0.932)
Wald, p-value	0.04	0.02	0.09	0.02	0.01	0.01			0.90	0.38	0.26	0.02
New_democracy*	1.306**	0.878**	1.484***	1.152***	1.077**	0.863**	0.819*	0.931**			1.437	1.066**
Election_year	(2.179)	(2.472)	(2.613)	(2.669)	(2.260)	(2.572)	(1.889)	(2.198)			(1.252)	(2.250)
Established_democracy*	0.270	0.350**	0.124	0.439**	0.493	0.269	0.857***	0.828***			-0.085	0.461**
Election_year	(0.938)	(2.255)	(0.445)	(2.337)	(1.132)	(1.056)	(2.709)	(3.542)			(-0.143)	(2.373)
Wald test, p-value	0.19	0.19	0.06	0.136	0.47	0.177	0.95	0.83			0.33	0.28
Proportional*Election_year	0.416	0.710***	0.937***	0.887***	0.962***	0.551**	1.028*	1.161***	0.931*	0.889**		
Election_year	(1.457)	(3.747)	(4.102)	(3.841)	(3.442)	(2.407)	(1.816)	(3.814)	(1.919)	(2.039)		
Majoritarian*Election_year	1.066	0.208	-0.111	0.230	0.052	0.191	0.525	0.479	0.776	0.491		
Election_year	(1.596)	(0.875)	(-0.255)	(0.668)	(0.113)	(0.435)	(0.605)	(1.404)	(1.072)	(1.117)		
Wald test, p-value	0.46	0.09	0.05	0.11	0.07	0.48	0.71	0.14	0.88	0.52		
Number of observations	884	884	652	652	502	502	442	442	373	373	574	574
Number of countries	69	69	63	63	54	54	49	49	43	43	42	42

**Sources:** IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:** See notes of Table A3. Estimated model when using interaction dummies (equation 2 of the paper):

$$f_{it} = \sum_{j=1}^p \alpha_j f_{i,t-j} + \beta_1 (ELY_{it} * D_{it}) + \beta_2 (ELY_{it} * (1 - D_{it})) + \phi D_{it} + X'_{it} \delta + \mu_i + \varepsilon_{it}$$

Further, we estimate an equation which includes the election-year variable, together with its interactions with all the different conditioning factors simultaneously (see equation 3 of the paper). While columns 1 and 2 of Table A6 first confirm that the interaction of the dummy variable for low media diffusion with the election year dummy exhibits statistically significant effects in both system-GMM and fixed effects estimations, their significant effects remain even when the interactions of all the other conditioning factors are also included. Meanwhile, for the other interaction variables, only the interaction for proportional electoral systems is marginally significant in the system GMM estimation (column 2). Lastly, to more precisely check if conditioning factors influence the electoral effects on the budget deficit, we test the hypothesis of equality of the marginal effects when each interaction dummy variable is zero and one. The p-values of those tests (reported at the foot of Table A6) indicate that the hypothesis of equality of marginal effects of the election year over *IMD\_Low* is rejected, which implies a significantly higher marginal effect of the election year when the index of media diffusion is low (*IMD\_Low*=1) than when it is high (*IMD\_Low*=0). The equality of marginal effects over the other conditioning dummies is only marginally rejected in column 4 for proportional electoral systems.

Overall, these results reinforce our conclusion that the share of informed voters is a critical conditioning factor of PBCs.

**Table A6. Electoral effects on the deficit when all conditions are included simultaneously**

	(1)	(2)	(3)	(4)
	SysGMM	FE	SysGMM	FE
L.Deficit (% GDP)	0.985*** (4.987)	0.729*** (8.980)	1.054*** (5.505)	0.726*** (9.027)
Election year	0.270* (1.721)	0.149 (0.966)	0.120 (0.219)	-0.625 (-1.390)
IMD_Low*Election_year	0.754** (2.059)	0.824** (2.489)	0.691* (1.904)	0.837** (2.611)
IMD Low	4.232 (1.344)	0.287 (0.757)	2.164 (0.966)	0.235 (0.626)
Predetermined_Election *Election_year			-0.116 (-0.259)	0.435 (1.217)
Predetermined_Election			-0.922 (-1.219)	-0.659** (-2.141)
Close_election*Election_year			0.263 (0.589)	0.004 (0.013)
Close election			0.481 (0.550)	0.002 (0.008)
New_democracy*Election_year			-0.077 (-0.198)	0.243 (0.686)
New democracy			0.320 (0.233)	0.188 (0.385)
Proportional*Election_year			0.195 (0.432)	0.542* (1.943)
Proportional			-1.508 (-0.830)	0.802*** (3.101)
Number of observations	884	884	884	884
Number of countries	69	69	69	69
Marginal effects of Election_year:				
Over IMD_Low	0.04	0.01	0.09	0.01
Over Predetermined_Election			0.72	0.24
Over Close election			0.58	0.82
Over New democracy			0.73	0.18
Over Proportional			0.73	0.08

**Sources:** IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:**

- All elections in democracies (defined as in Cheibub et al. 2010). Sample period: 1975-2010.
- Estimated model (equation 3):  $f_{it} = \sum_{j=1}^p \alpha_j f_{i,t-j} + \beta ELY_{it} + \sum_{k=1}^5 [\gamma_k (ELY_{it} * D_{kit}) + \phi_k D_{kit}] + \mathbf{X}'_{it} \boldsymbol{\delta} + \mu_i + \varepsilon_{it}$
- Two-step results using robust standard errors corrected for finite samples are reported in System-GMM (Sys-GMM). Robust standard errors are used in Fixed Effects (FE) estimations.
- Log(GDPpc 2005), Trade (%GDP) and Output gap were treated as endogenous in the Sys-GMM estimations. Their lagged values (two periods) were used as instruments in the first-difference equations and their (once lagged) first-differences were used in the levels equation. The option collapse of the command xtabond2 for Stata was used in order to avoid a very high number of instruments. These variables were lagged one period in the FE estimations in order to avoid simultaneity/endogeneity problems.
- t-statistics in parenthesis. Significance level at which the null hypothesis is rejected: \*\*\*, 1%, \*\*, 5%, and \*, 10%.

## 5 Robustness tests with a post-election year dummy

In this section, we simultaneously included an election year (EY) and a post-election year (EY+1) dummy in the models. The results of the re-estimation the models of Tables A3 and A4 including a dummy for EY+1 are reported in Tables A7 and A8 below.

Except for estimation (1) of Table A8, the dummy variable for the post-election year (EY+1) is never statistically significant. The same happens to the interactions of this dummy variable with those for high and low media diffusion. Despite the lack of statistical significance, in all estimations of Table A7, the post-election dummy has the opposite sign of the election-year dummy and, importantly, Wald tests always reject the equality of their coefficients (see the last row). Thus, there is a clear indication of reversion of policy in the year after the election, although the effect may not be strong enough for statistical significance of the EY+1 dummy. A similar observation can be made regarding practically all the estimations of Table A8.

In Table A9, we add interactions for the post-election year dummy to some estimations reported in Table A5 (third row) and Table 1 of the paper. Again, these interactions are not statistically significant. Regarding the interactions with low media freedom/diffusion, the sign of the coefficient for the post-election year is generally the opposite of that for the election year (as expected), and the equality of the coefficients is always rejected by the Wald tests.

**Table A7. Electoral effects for all democracies and elections**

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Expenditure		Total Revenue		Deficit	
	Sys-GMM	FE	Sys-GMM	FE	Sys-GMM	FE
L.CG_gdp	1.072*** (5.470)	0.812*** (17.865)	0.854*** (5.529)	0.793*** (27.838)	0.956*** (3.875)	0.716*** (9.560)
Election year (EY)	0.332 (1.398)	0.308** (2.048)	-0.146 (-1.071)	-0.164 (-1.414)	0.507* (1.923)	0.459*** (3.067)
Post-Election year (EY+1)	-0.173 (-0.616)	-0.062 (-0.303)	0.132 (1.113)	0.148 (1.176)	-0.313 (-0.881)	-0.165 (-0.864)
Log(GDPpc 2005)	3.725 (1.425)	-0.306 (-0.405)	0.698 (0.383)	0.381 (0.467)	9.496* (1.657)	-0.800 (-0.734)
Trade (% GDP)	0.060 (1.485)	-0.004 (-0.685)	0.002 (0.056)	-0.006 (-1.529)	0.188* (1.777)	0.001 (0.167)
% Pop under 15	0.491* (1.946)	-0.000 (-0.007)	0.108 (0.462)	-0.019 (-0.367)	1.128** (2.036)	0.021 (0.365)
% Pop over 65	-0.154 (-0.501)	0.087 (0.573)	0.231 (0.821)	0.140 (1.276)	-0.165 (-0.317)	-0.031 (-0.202)
Output gap	7.512 (0.515)	23.630*** (4.435)	4.483 (0.638)	4.543 (1.469)	-21.550 (-1.067)	16.772** (2.601)
1970s	-0.196 (-0.106)	-0.590 (-1.220)	-0.195 (-0.331)	-0.111 (-0.373)	0.267 (0.123)	-0.574 (-1.068)
1980s	0.122 (0.090)	-0.429 (-1.010)	0.021 (0.043)	0.127 (0.519)	1.511 (0.831)	-0.473 (-0.883)
1990s	0.048 (0.078)	-0.640*** (-2.906)	0.182 (0.351)	0.069 (0.426)	1.641 (1.262)	-0.604** (-2.124)
Number of observations	951	951	951	951	951	951
Number of countries	69	69	69	69	69	69
Number of instruments	16.00		16.00		16.00	
Arellano-Bond AR(1), p-value	0.00		0.00		0.00	
Arellano-Bond AR(2), p-value	0.22		0.30		0.41	
Hansen (p-value)	0.55		0.96		0.61	
Diff Hansen 1 (p-value)	0.55		0.96		0.61	
Diff Hansen 2, (p-value)	0.17		0.88		0.20	
Adjusted R <sup>2</sup>		0.693		0.767		0.447
Wald, p-value (EY=EY+1)	0.02	0.06	0.03	0.01	0.00	0.01

**Sources:** IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:**

- All elections in democracies (defined as in Cheibub et al. 2010). Sample period: 1975-2010.

- Estimated model (equation 1):  $f_{it} = \sum_{j=1}^p \alpha_j f_{i,t-j} + \beta_1 ELY_{it} + \beta_2 PostELY_{it} + \mathbf{X}'_{it} \boldsymbol{\delta} + \mu_i + \varepsilon_{it}$

- Two-step results using robust standard errors corrected for finite samples are reported in System-GMM (Sys-GMM). Robust standard errors are used in Fixed Effects (FE) estimations.

- Log(GDPpc 2005), Trade (%GDP) and Output gap were treated as endogenous in the Sys-GMM estimations. Their lagged values (two periods) were used as instruments in the first-difference equations and their (once lagged) first-differences were used in the levels equation. The option collapse of the command xtabond2 for Stata was used in order to avoid a very high number of instruments. These variables were lagged one period in the FE estimations in order to avoid simultaneity/endogeneity problems.

- t-statistics in parenthesis. Significance level at which the null hypothesis is rejected: \*\*\*, 1%, \*\*, 5%, and \*, 10%.



**Table A8. Electoral effects on the deficit using sub samples**

	Predetermined		Not predetermined	
	SysGMM	FE	SysGMM	FE
	(1)	(2)	(3)	(4)
Election year	0.430** (2.165)	0.642*** (3.200)	0.692 (0.872)	0.517** (2.296)
Post-Election year	-0.588* (-1.799)	-0.236 (-0.891)	1.540 (1.064)	1.113* (1.893)
Observations	652	652	231	231
Number of countries	63	63	44	44
	Close Elections		Not Closed Elections	
	SysGMM	FE	SysGMM	FE
	(5)	(6)	(7)	(8)
Election year	0.678** (2.548)	0.381* (1.850)	-0.040 (-0.025)	0.260 (1.056)
Post-Election year	-0.092 (-0.350)	-0.227 (-0.825)	-1.115 (-0.293)	-0.203 (-0.580)
Observations	496	496	379	379
Number of countries	54	54	50	50
	Low Index of Media Diffusion		High Index of Media Diffusion	
	SysGMM	FE	SysGMM	FE
	(9)	(10)	(11)	(12)
Election year	0.655** (2.255)	0.792*** (3.159)	0.355** (2.119)	0.178 (1.163)
Post-Election year	-0.492 (-1.599)	-0.233 (-0.785)	0.167 (0.552)	-0.013 (-0.054)
Observations	434	434	441	441
Number of countries	49	49	31	31
	New Democracies		Established Democracies	
	SysGMM	FE	SysGMM	FE
	(13)	(14)	(15)	(16)
Election year	0.727** (2.355)	0.597* (1.745)	0.370 (1.421)	0.392** (2.384)
Post-Election year	-0.168 (-0.442)	-0.304 (-0.877)	0.099 (0.260)	0.066 (0.306)
Observations	370	370	505	505
Number of countries	43	43	34	34
	Proportional		Majoritarian	
	SysGMM	FE	SysGMM	FE
	(17)	(18)	(19)	(20)
Election year	0.413 (1.574)	0.582*** (3.073)	-0.301 (-0.534)	0.184 (0.763)
Post-Election year	-0.295 (-0.853)	-0.248 (-0.903)	-0.431 (-1.044)	-0.089 (-0.319)
Observations	568	568	307	307
Number of countries	42	42	29	29

**Sources:** IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:** See notes of Table A7.

**Table A9. Electoral effects on the deficit under alternative political attributes**

	All elections		Sub-samples							
			Predetermined		Close Elections		New Democracies		Proportional	
	SysGMM (1)	FE (2)	SysGMM (3)	SysGMM (4)	SysGMM (5)	SysGMM (6)	FE (9)	FE (10)	SysGMM (11)	FE (12)
IMD_Low*Election_year	0.918** (2.488)	0.846*** (3.145)	0.669 (1.443)	1.102*** (3.124)	1.270*** (2.986)	0.912*** (2.918)	0.594 (1.363)	0.739 (1.581)	0.630 (1.310)	1.098*** (3.106)
IMD_Low*Post-Election_year	-0.277 (-0.607)	-0.417 (-1.191)	-1.051 (-1.628)	-0.753 (-1.395)	0.026 (0.055)	-0.497 (-1.224)	-0.241 (-0.634)	-0.442 (-0.892)	-0.252 (-0.478)	-0.543 (-1.066)
IMD_High*Election_year	0.313 (1.358)	0.139 (0.872)	0.221 (1.017)	0.255 (1.615)	0.250 (1.059)	-0.033 (-0.142)	0.684 (1.211)	0.329 (0.892)	0.440* (1.787)	0.170 (0.817)
IMD_High*Post-Election_year	0.086 (0.253)	-0.023 (-0.108)	-0.087 (-0.256)	0.087 (0.332)	-0.131 (-0.366)	-0.026 (-0.075)	0.028 (0.056)	-0.086 (-0.195)	0.239 (0.557)	-0.051 (-0.178)
Wald, p-value (low*EY=low*EY+1)	0.01	0.00	0.02	0.004	0.00	0.0002	0.10	0.06	0.05	0.005
Media_freedom_Low*Election_year	0.784** (2.184)	0.784** (2.184)	0.803*** (2.847)	0.876* (1.865)	1.276*** (3.469)	1.348*** (3.665)	0.786** (2.167)	1.066*** (2.600)	0.866* (1.941)	0.735 (1.338)
Media_freedom_Low*Post-Election_year	-0.807 (-1.499)	-0.807 (-1.499)	-0.544 (-1.487)	-1.153 (-1.360)	-0.580 (-1.008)	-0.223 (-0.529)	-0.770** (-2.051)	-0.101 (-0.218)	-0.633 (-1.300)	-0.941 (-1.257)
Media_freedom_High*Election_year	0.551* (1.675)	0.551* (1.675)	0.239 (1.374)	0.107 (0.560)	0.239 (1.334)	0.271 (1.163)	0.206 (0.814)	-0.098 (-0.194)	0.261 (0.555)	0.588* (1.914)
Media_freedom_High*Post-Election_year	0.401 (1.005)	0.401 (1.005)	0.076 (0.361)	-0.126 (-0.377)	-0.064 (-0.246)	0.126 (0.376)	0.275 (0.753)	-0.149 (-0.290)	0.262 (0.568)	0.502 (1.155)
Wald, p-value (low*EY=low*EY+1)	0.00	0.00	0.003	0.01	0.01	0.00	0.0002	0.03	0.02	0.00
Number of observations	875	875	875	652	652	496	496	370	370	568
Number of countries	69	69	69	63	63	54	54	43	43	42
Internet_users_Low*Election_year	0.969*** (2.865)	0.548** (2.201)	0.654** (2.176)	0.745*** (2.691)	0.881*** (2.818)	0.639*** (2.797)	0.526 (1.326)	0.343 (0.778)	0.985*** (3.356)	0.788*** (2.815)
Internet_users_Low*Post-Election_year	-0.089 (-0.233)	-0.140 (-0.484)	-0.117 (-0.309)	-0.126 (-0.367)	0.085 (0.219)	-0.117 (-0.334)	-0.528 (-1.440)	-0.609 (-1.377)	-0.234 (-0.557)	-0.191 (-0.505)
Internet_users_High*Election_year	-0.198 (-0.211)	-0.643 (-0.840)	-0.790 (-0.771)	0.150 (0.223)	-0.970 (-0.775)	-0.821 (-1.304)	-2.182 (-0.838)	-0.322 (-0.293)	-0.008 (-0.007)	-0.256 (-0.281)
Internet_users_High*Post-Election_year	1.736 (1.236)	0.553 (0.487)	0.234 (0.261)	0.391 (0.833)	-0.478 (-0.544)	-0.525 (-0.707)	3.783 (1.260)	3.412 (0.949)	1.951 (1.137)	0.921 (0.631)
Wald, p-value (low*EY=low*EY+1)	0.01	0.03	0.05	0.02	0.06	0.06	0.01	0.07	0.00	0.01
Number of observations	570	570	435	435	345	345	248	248	386	386
Number of countries	65	65	59	59	50	50	38	38	41	41

**Sources:** IMF (GFS and WEO); World Bank (DPI and WDI), and Cheibub et al. (2010).

**Notes:** See notes of Table A7. Estimated model when using interaction dummies (based on equation 2 of the paper).

$$f_{it} = \sum_{j=1}^p \alpha_j f_{it,t-j} + \beta_1(ELY_{it} * D_{it}) + \beta_2(ELY_{it} * (1 - D_{it})) + \beta_3(PostELY_{it} * D_{it}) + \beta_4(PostELY_{it} * (1 - D_{it})) + \phi D_{it} + \mathbf{X}'_{it} \boldsymbol{\delta} + \mu_i + \varepsilon_{it}$$