Manuscript ID: EER-D-15-00684

Public spending and growth: the role of government accountability

Online Appendix

Contents:

1. Construction of the fiscal dataset

To explain how we construct unified disaggregated spending series following economic classifications, we start with clarifying the main differences in the exact definitions of "current" and "capital" concepts under GFSM2001 and GFSM1986 (see Wickens (2002) for details). First, the capital expenditure concept under GFSM2001, denoted as "net acquisition of non-financial assets" adopts a net concept, deducting government revenue from the sales of fixed capital assets, while capital expenditure under GFSM1986, following a gross concept, does not deduct the revenue from capital sales, which is recorded as part of total revenue. Second, while capital transfers were a part of capital expenditure under GFSM1986, they are part of the current expenditure concept, denoted as "expense", under GFSM2001. Facing these differences, we first retrieved all historical spending data available for all countries that have reported data to the IMF's GFS yearbook from 1970 to 2010 and then converted spending items under GFSM1986 into the concepts defined by GFSM2001, so that the capital spending in our spending series deducts sales revenues and excludes capital transfers, with the latter included in the current spending.

However, there is another key remaining issue to be dealt with, related to the fact that under GFSM 1986, statistics are reported on a cash basis (i.e., flows are recorded at the time cash is received or paid), while under GFSM2001, they are on an accrual basis (i.e., flows are recorded when economic value is created or extinguished). Specifically, the accrual concept of "consumption of fixed capital", i.e., a decline in the value of governments' fixed assets due to physical deterioration, obsolescence, or accidental damages, exists only under GFSM2001. This implies that even after the adjustments mentioned above, the capital spending concept under GFSM1986 and GFSM2001 are still not consistent, with the former not deducting this "depreciation" of capital. To tackle this, for the data originally retrieved from GFSM2001, we move (i.e., add) the consumption of fixed capital, initially categorized as current spending, to the capital spending component, so that the modified capital spending component becomes comparable to the ones from GFSM1986, i.e., without the depreciation deducted. More generally, however, the innate difference between cash- and accrual-based statistics still remains. Therefore, although the use of time dummies in our analyses should help mitigate the effects of possible systematic differences between them (remember that GFSM2001 was introduced between mid 1990s and early 2000s), it is important to acknowledge that our unification measure is not exact, but approximate.

We also report that the level of government covered in the unified dataset is at the central government (CG) level. This is because, under GFSM1986, countries report data at most at the CG

level, although under GFSM2001 they also provide data for the general government (GG) level. We primarily use consolidated, rather than budgetary, CG level data, yet when no budget deficits data are available at the consolidated level for a country over our sample period (1970-2010), we use budgetary data for that country, to maximize the number of countries and of observations available. Note that this way of using budgetary CG data ensures that when considering fiscal series for a given country, consolidated and budgetary CG data are never mixed over time, thus no potential "jump" in the series is created due to the usage of data from different CG levels. Nonetheless, our robustness checks consider the case where no budgetary CG level data are included.

Lastly, to construct consistent total revenue series spanning two methodologies, for the total revenue data retrieved from GFSM1986, we exclude the revenue from sales of capital assets, to make it in line with the total revenue concept under GFSM2001. Having made the current and capital spending and total revenue comparable between the methodologies, we subsequently obtain the budget deficit as a difference between total expenditure, a sum of current and capital spending, and total revenue.

2. Data sources

The GDP growth rate is obtained as the log difference over 8 years (for our reference regressions) of real GDP per capita taken from the Penn World Tables (PWT 8.0, Feenstra et al. (2015)). Initial real GDP per capita is from the same source. All the fiscal variables are originally from the IMF's GFS yearbook. To calculate fiscal data as a ratio to GDP, GDP figures are taken from the World Economic Outlook (WEO), while exchange rate data, required for unit conversion, are from both WEO and the International Financial Statistics (IFS) databases of the IMF.

Turning to the other explanatory variables, years of schooling (for the population aged between 25 and 64) is from Barro and Lee (2010), which is interpolated to proxy initial human capital in each period. The private investment ratio is calculated as a difference between the total investment ratio (the ratio of gross fixed capital formation to GDP, from WEO) and the share of capital spending in GDP that we assembled. The population growth rate is from WEO. Percentages of the population below 15 and above 65 years old, used in the robustness checks, are from the World Bank's World Development Indicators (WDI). The inflation rate is calculated as the relevant percentage change in CPI, from WEO. The degree of openness is obtained as the ratio of the sum of values of imports and exports to GDP, all of which are from WEO. Private credit, defined as the ratio of domestic credit to private sector to GDP, is from WDI. Black market exchange rates, which we interpolated to address the scarcity of observations, are from the Economic Freedom of the World Annual Report (EFW, Gwartney et al. (2013)). The party ideology variable is from the 2012 version of the Database of Political Institutions (Beck et al. (2001)). Fiscal decentralization on total spending is calculated using the World Bank's fiscal decentralization indicators. Price level of investment (capital formation) is from PWT 8.0, while the real interest rate is from WDI. Last, real effective exchange rates data, used to create the uncertainty measure, are from WDI and WEO.

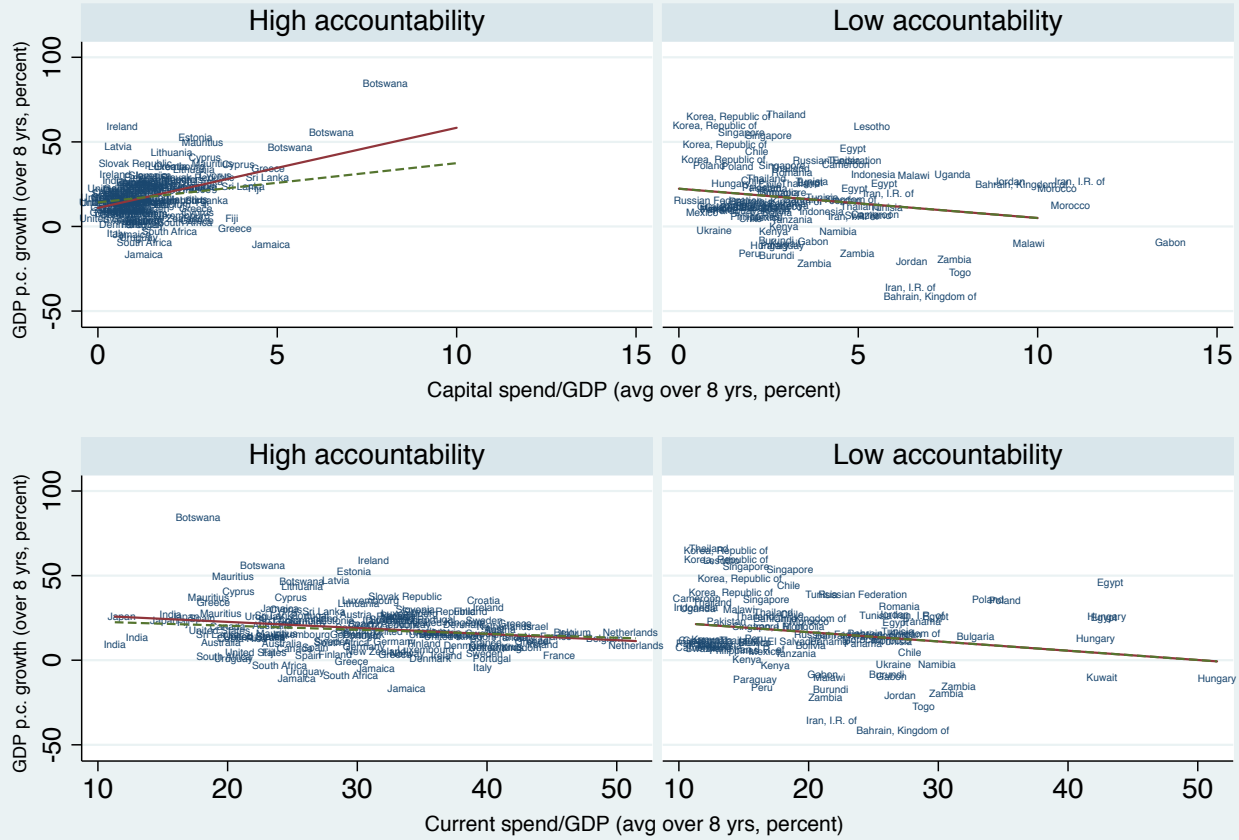
The government accountability proxies of executive constraints, democracy/autocracy, and voice and accountability are from Polity IV (Marshall et al. (2013)), Polity IV, and the Worldwide Governance Indicators (WGI, Kaufmann et al. (2010)), respectively, while freedom of the press is from Freedom House (Dunham et al. (2015)). The law enforceability proxy is from EFW. Corruption proxies, corruption and control of corruption, are from the International Country Risk Guide and WGI, respectively. Last, PPP-adjusted real GDP per capita data, used to classify countries by income level, is from WEO.

3. Stylized facts on the relationship between public spending and growth

This section of the online appendix complements section 2.3 – *Stylized facts* - of the paper, by presenting further simple evidence indicative of the key role of government accountability in the nexus between public spending and growth.

Figure 1 plots public capital and current spending as a share of GDP against growth rates, both based on the 8-year non-overlapping averages data used in the regression analysis of the paper (covering 80 countries). "Constraints" is used to classify countries by accountability levels. Being in line with Figure 1 of the paper, the upper-left subfigure shows that particularly under high accountability, the relation between capital spending and growth is significantly positive. Although excluding 3 observations for Botswana, located in the north east of the subfigure, weakens the relation (see dashed fitted line), the statistical significance remains. Still, it is important to acknowledge that this is an indication that the relation is sensitive to the inclusion/exclusion of certain observations.

Figure 1: Scatterplot: public spending/GDP and growth (with non-overlapping averages)



Note: Dashed fitted line is for a sample excluding Botswana
Source: Authors' calculations, using 8-year periods data

Further, we report that, even when other variables are controlled for, OLS estimators still confirm the econometric analysis based on system-GMM estimators reported in the paper.

Specifically, Figures 2 and 3, which are added variable plots[1] based on OLS estimations of the regression equation of Table 3 of the paper, with standard errors clustered by country, show that capital spending (scaled by GDP) is still positively associated with growth, particularly under high-government accountability. Notice that this is the case, even when financing factors are specified, for both "constraints" (Figure 2) and "voice" (Figure 3) as accountability proxies. Table 1 presents the corresponding estimation results.

[1] These added variable plots (also known as partial regression plots) are made using the Stata command "avplot". Note that this *avplot* command works with OLS regressions, but not with other estimation methods, such as system-GMM.

Figure 2: Added variable plots: the capital spending-growth nexus across accountability levels ("constraints" used as a proxy)

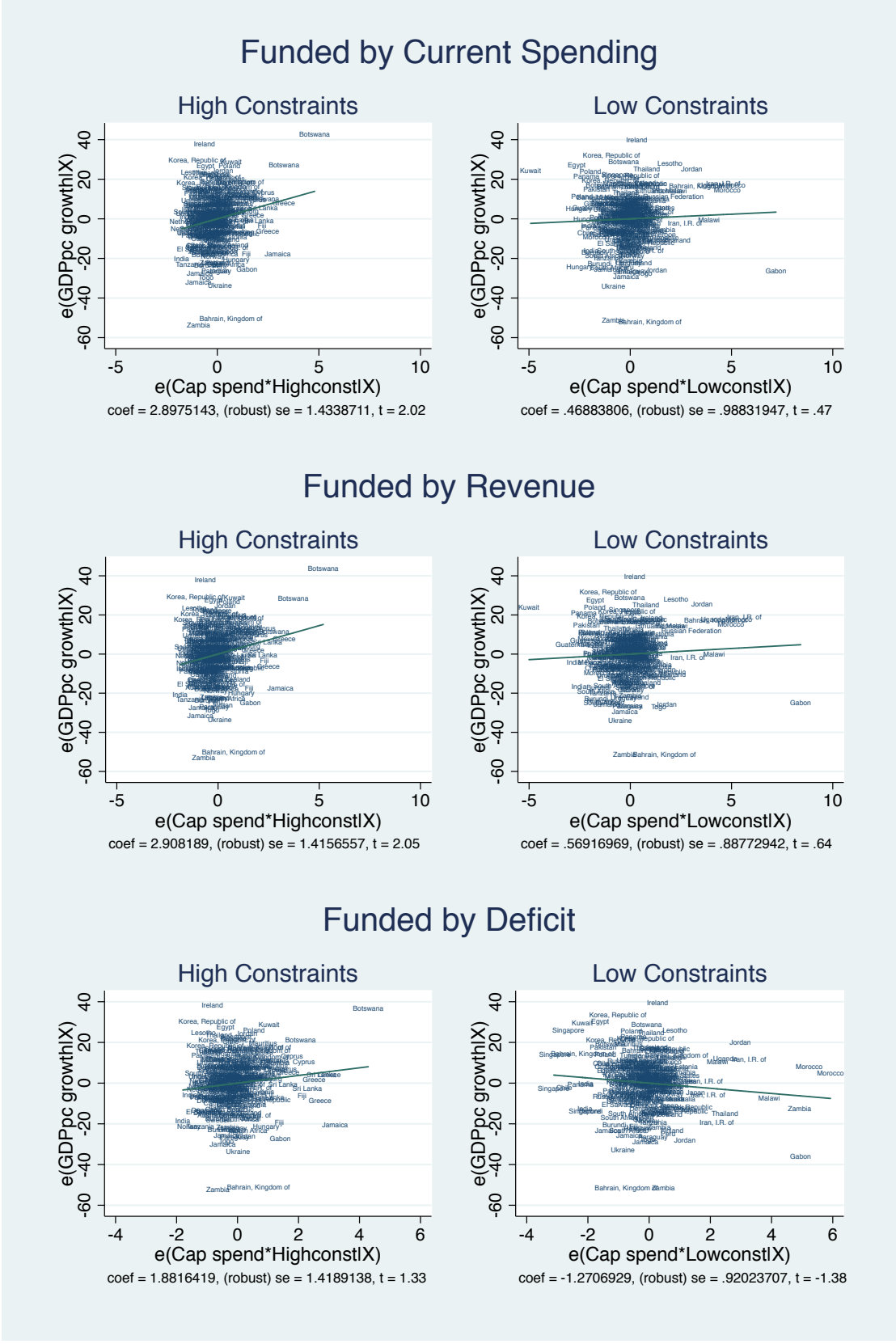


Figure 3: Added variable plots: the capital spending-growth nexus across accountability levels ("voice" used as a proxy)

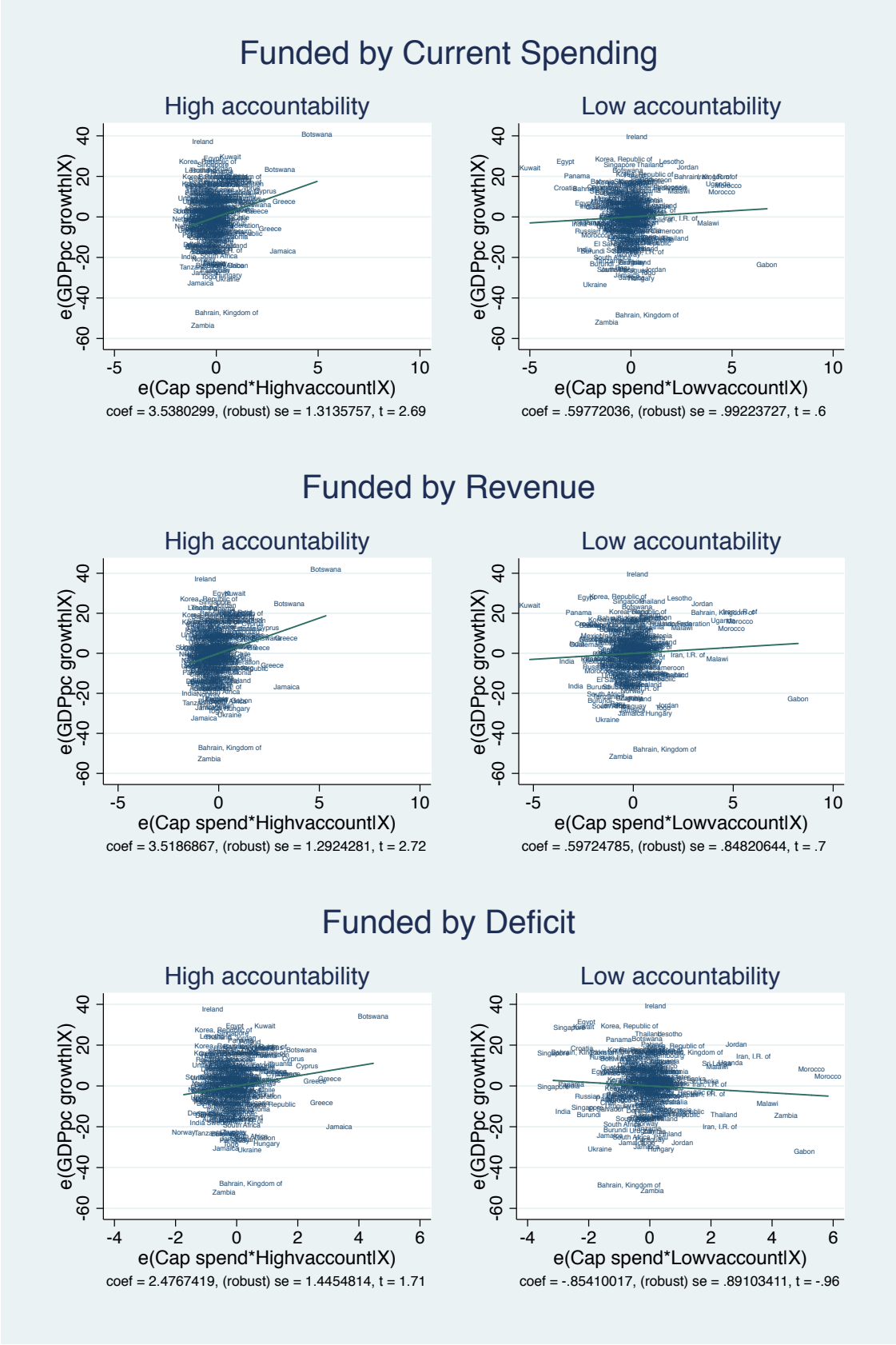


Table 1: OLS Results (with standard errors clustered by country)

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Cap spend*Highacc	2.898**	3.538***	2.908**	3.519***	1.882	2.477*
	(2.021)	(2.693)	(2.054)	(2.723)	(1.326)	(1.713)
Cap spend*Lowacc	0.469	0.598	0.569	0.597	-1.271	-0.854
	(0.474)	(0.602)	(0.641)	(0.704)	(-1.381)	(-0.959)
Cur spend*Highacc			0.011	-0.019	-1.016***	-1.061***
			(0.068)	(-0.122)	(-2.793)	(-2.791)
Cur spend*Lowacc			0.100	-0.000	-1.740***	-1.452**
			(0.447)	(-0.002)	(-3.454)	(-2.586)
Revenue*Highacc	0.011	-0.019			1.027***	1.042***
	(0.068)	(-0.122)			(2.798)	(2.737)
Revenue*Lowacc	0.100	-0.000			1.840***	1.451***
	(0.447)	(-0.002)			(3.735)	(2.770)
Deficit*Highacc	-1.016***	-1.061***	-1.027***	-1.042***		
	(-2.793)	(-2.791)	(-2.798)	(-2.737)		
Deficit*Lowacc	-1.740***	-1.452**	-1.840***	-1.451***		
	(-3.454)	(-2.586)	(-3.735)	(-2.770)		
Initial GDP p.c.	-6.515***	-7.028***	-6.515***	-7.028***	-6.515***	-7.028***
	(-3.477)	(-3.784)	(-3.477)	(-3.784)	(-3.477)	(-3.784)
Initial Schooling	1.136*	1.266**	1.136*	1.266**	1.136*	1.266**
	(1.811)	(2.222)	(1.811)	(2.222)	(1.811)	(2.222)
Private inv/GDP	1.100***	1.137***	1.100***	1.137***	1.100***	1.137***
	(4.245)	(4.375)	(4.245)	(4.375)	(4.245)	(4.375)
Pop growth	-3.325**	-3.074**	-3.325**	-3.074**	-3.325**	-3.074**
	(-2.514)	(-2.304)	(-2.514)	(-2.304)	(-2.514)	(-2.304)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	228	228	228	228	228	228
No. of countries	80	80	80	80	80	80
Adjusted R-squared	0.38	0.39	0.38	0.39	0.38	0.39
Wald Cap Spend	0.16	0.08	0.15	0.06	0.06	0.06
Wald Cur Spend			0.56	0.93	0.24	0.56

Notes: The dependent variable is the GDP per capita growth rate over 8 years. Pooled OLS estimations, with robust standard errors clustered by country (which take within-country serial correlation into account) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels.

4. Estimation results with democracy proxies

Table 2: Role of government accountability using "democracy/autocracy" as a proxy

	Interactions with accountability level			With accountability and income levels			With accountability and enforcement levels		
Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Capital spend*Highacc	7.092***	7.597***	6.286**						
	(2.329)	(2.266)	(2.565)						
Capital spend*Lowacc	2.865*	3.640**	1.025						
	(1.699)	(1.649)	(1.357)						
Capital spend*Highinc*Highacc				6.872***	7.171***	5.921**			
				(2.441)	(2.405)	(2.562)			
Capital spend*Highinc*Lowacc				-0.629	0.109	-2.697			
				(2.579)	(2.390)	(2.496)			
Capital spend*Lowinc*Highacc				6.866*	7.165**	5.915			
				(3.513)	(3.317)	(3.823)			
Capital spend*Lowinc*Lowacc				2.157	2.895**	0.089			
				(1.357)	(1.315)	(1.241)			
Capital spend*Highenf*Highacc							6.166**	6.603**	5.155*
							(2.747)	(2.718)	(2.989)
Capital spend*Highenf*Lowacc							2.239	2.895*	0.646
							(1.797)	(1.715)	(1.701)
Capital spend*Lowenf*Highacc							5.859**	6.296***	4.849*
							(2.531)	(2.379)	(2.644)
Capital spend*Lowenf*Lowacc							2.157	2.812*	0.563
							(1.694)	(1.656)	(1.441)
Current spend*Highacc		0.505**	-0.807		0.299	-0.951		0.437	-1.010*
		(0.248)	(0.639)		(0.312)	(0.583)		(0.292)	(0.602)
Current spend*Lowacc		0.775***	-1.840**		0.738**	-2.068***		0.655**	-1.594**
		(0.290)	(0.852)		(0.323)	(0.737)		(0.309)	(0.752)
Revenue*Highacc	0.505**		1.312**	0.299		1.250*	0.437		1.448**
	(0.248)		(0.658)	(0.312)		(0.665)	(0.292)		(0.603)
Revenue*Lowacc	0.775***		2.615***	0.738**		2.806***	0.655**		2.249***
	(0.290)		(0.847)	(0.323)		(0.813)	(0.309)		(0.760)
Budget deficit*Highacc	-0.807	-1.312**		-0.951	-1.250*		-1.010*	-1.448**	
	(0.639)	(0.658)		(0.583)	(0.665)		(0.602)	(0.603)	
Budget deficit*Lowacc	-1.840**	-2.615***		-2.068***	-2.806***		-1.594**	-2.249***	
	(0.852)	(0.847)		(0.737)	(0.813)		(0.752)	(0.760)	

Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Initial GDP p.c. (log)	-11.431***	-11.431***	-11.431***	-9.281*	-9.281*	-9.281*	-11.016**	-11.016**	-11.016**
	(3.259)	(3.259)	(3.259)	(5.120)	(5.120)	(5.120)	(4.218)	(4.218)	(4.218)
Initial level of schooling	1.778	1.778	1.778	1.844	1.844	1.844	1.610	1.610	1.610
	(1.519)	(1.519)	(1.519)	(1.219)	(1.219)	(1.219)	(1.400)	(1.400)	(1.400)
Private investment/GDP	1.606***	1.606***	1.606***	1.414**	1.414**	1.414**	1.650***	1.650***	1.650***
	(0.557)	(0.557)	(0.557)	(0.581)	(0.581)	(0.581)	(0.443)	(0.443)	(0.443)
Population growth	-6.487**	-6.487**	-6.487**	-5.720**	-5.720**	-5.720**	-6.253**	-6.253**	-6.253**
	(2.919)	(2.919)	(2.919)	(2.361)	(2.361)	(2.361)	(2.663)	(2.663)	(2.663)
Financing source	Cur spend	Revenue	Deficit	Cur spend	Revenue	Deficit	Cur spend	Revenue	Deficit
Observations	228	228	228	228	228	228	227	227	227
No. of countries	80	80	80	80	80	80	79	79	79
No. of instruments	69	69	69	79	79	79	79	79	79
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond AR(2), p-value	0.27	0.27	0.27	0.19	0.19	0.19	0.18	0.18	0.18
Hansen, p-value	0.69	0.69	0.71	0.97	0.97	0.95	0.99	0.99	0.99
Diff Hansen 1, p-value	0.70	0.69	0.71	1.00	1.00	0.99	1.00	1.00	1.00
Diff Hansen 2, p-value	0.09	0.08	0.10	0.15	0.74	0.08	0.62	0.65	0.55
Wald Cap spend, p-value	0.07	0.07	0.03						
Wald Cur spend, p-value		0.28	0.33						
Wald Cap spend, Highacc, Income				1.00	1.00	1.00			
Wald Cap spend, Lowacc, Income				0.24	0.24	0.24			
Wald Cap spend, Highacc, Enforcement							0.89	0.89	0.89
Wald Cap spend, Lowacc, Enforcement							0.96	0.96	0.96

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. Wald, Cap spend, Highacc (Lowacc), Income tests the equality of coefficients on capital spending across different income levels for countries with accountable (unaccountable) governments. Wald, Cap spend, Highacc (Lowacc), Enforcement tests the equality of coefficients on capital spending across different law enforcement levels for countries with accountable (unaccountable) governments.

Table 3: Role of government accountability using "XPOLITY" (Vreeland's correction) as a proxy

	Interactions with accountability level			With accountability and income levels			With accountability and enforcement levels		
Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Capital spend*Highacc	7.008***	7.508***	6.162**						
	(2.350)	(2.277)	(2.573)						
Capital spend*Lowacc	2.851*	3.622**	1.034						
	(1.682)	(1.622)	(1.341)						
Capital spend*Highinc*Highacc				6.895***	7.204***	5.902**			
				(2.433)	(2.392)	(2.557)			
Capital spend*Highinc*Lowacc				-0.702	0.045	-2.757			
				(2.534)	(2.346)	(2.457)			
Capital spend*Lowinc*Highacc				6.522*	6.831**	5.529			
				(3.449)	(3.244)	(3.735)			
Capital spend*Lowinc*Lowacc				2.087	2.834**	0.032			
				(1.327)	(1.286)	(1.219)			
Capital spend*Highenf*Highacc							6.236**	6.671**	5.205*
							(2.821)	(2.798)	(3.076)
Capital spend*Highenf*Lowacc							2.182	2.838*	0.604
							(1.759)	(1.669)	(1.673)
Capital spend*Lowenf*Highacc							5.713**	6.147**	4.681*
							(2.489)	(2.329)	(2.602)
Capital spend*Lowenf*Lowacc							2.102	2.759*	0.525
							(1.638)	(1.588)	(1.386)
Current spend*Highacc		0.500**	-0.846		0.309	-0.993*		0.434	-1.032*
		(0.244)	(0.627)		(0.314)	(0.568)		(0.288)	(0.598)
Current spend*Lowacc		0.772***	-1.817**		0.747**	-2.055***		0.656**	-1.578**
		(0.289)	(0.850)		(0.322)	(0.739)		(0.306)	(0.750)
Revenue*Highacc	0.500**		1.347**	0.309		1.302**	0.434		1.466**
	(0.244)		(0.654)	(0.314)		(0.648)	(0.288)		(0.600)
Revenue*Lowacc	0.772***		2.589***	0.747**		2.802***	0.656**		2.234***
	(0.289)		(0.840)	(0.322)		(0.818)	(0.306)		(0.755)
Budget deficit*Highacc	-0.846	-1.347**		-0.993*	-1.302**		-1.032*	-1.466**	
	(0.627)	(0.654)		(0.568)	(0.648)		(0.598)	(0.600)	
Budget deficit*Lowacc	-1.817**	-2.589***		-2.055***	-2.802***		-1.578**	-2.234***	
	(0.850)	(0.840)		(0.739)	(0.818)		(0.750)	(0.755)	

Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Initial GDP p.c. (log)	-11.463***	-11.463***	-11.463***	-9.531*	-9.531*	-9.531*	-11.105**	-11.105**	-11.105**
	(3.233)	(3.233)	(3.233)	(5.118)	(5.118)	(5.118)	(4.230)	(4.230)	(4.230)
Initial level of schooling	1.838	1.838	1.838	1.854	1.854	1.854	1.645	1.645	1.645
	(1.515)	(1.515)	(1.515)	(1.205)	(1.205)	(1.205)	(1.387)	(1.387)	(1.387)
Private investment/GDP	1.595***	1.595***	1.595***	1.420**	1.420**	1.420**	1.642***	1.642***	1.642***
	(0.553)	(0.553)	(0.553)	(0.583)	(0.583)	(0.583)	(0.444)	(0.444)	(0.444)
Population growth	-6.474**	-6.474**	-6.474**	-5.664**	-5.664**	-5.664**	-6.189**	-6.189**	-6.189**
	(2.894)	(2.894)	(2.894)	(2.342)	(2.342)	(2.342)	(2.620)	(2.620)	(2.620)
Financing source	Cur spend	Revenue	Deficit	Cur spend	Revenue	Deficit	Cur spend	Revenue	Deficit
Observations	228	228	228	228	228	228	227	227	227
No. of countries	80	80	80	80	80	80	79	79	79
No. of instruments	69	69	69	79	79	79	79	79	79
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond AR(2), p-value	0.26	0.26	0.26	0.17	0.17	0.17	0.17	0.17	0.17
Hansen, p-value	0.68	0.69	0.70	0.98	0.98	0.96	0.99	0.99	0.99
Diff Hansen 1, p-value	0.69	0.70	0.71	1.00	1.00	1.00	1.00	1.00	1.00
Diff Hansen 2, p-value	0.05	0.06	0.06	0.20	0.19	0.11	0.63	0.64	0.53
Wald Cap spend, p-value	0.08	0.08	0.04						
Wald Cur spend, p-value		0.28	0.36						
Wald Cap spend, Highacc, Income				0.91	0.91	0.91			
Wald Cap spend, Lowacc, Income				0.23	0.23	0.23			
Wald Cap spend, Highacc, Enforcement							0.82	0.82	0.82
Wald Cap spend, Lowacc, Enforcement							0.97	0.97	0.97

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. Wald, Cap spend, Highacc (Lowacc), Income tests the equality of coefficients on capital spending across different income levels for countries with accountable (unaccountable) governments. Wald, Cap spend, Highacc (Lowacc), Enforcement tests the equality of coefficients on capital spending across different law enforcement levels for countries with accountable (unaccountable) governments.

5. Exploiting time variations in institutional proxies

Table 4: Interaction between public spending and government accountability

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Capital spend/GDP	-1.635	-1.075	-1.756	-0.527	-2.485	-1.692
	(1.804)	(1.743)	(1.810)	(1.651)	(1.570)	(1.630)
Capital spend/GDP*Account	1.101**	0.645*	1.172**	0.639**	0.985**	0.572*
	(0.468)	(0.324)	(0.447)	(0.310)	(0.450)	(0.303)
Current spend/GDP			-0.121	0.548	-0.850	-0.617
			(0.944)	(0.779)	(1.355)	(1.151)
Current spend/GDP*Account			0.070	-0.006	-0.117	-0.073
			(0.155)	(0.087)	(0.246)	(0.137)
Revenue/GDP	-0.121	0.548			0.729	1.165
	(0.944)	(0.779)			(1.443)	(1.199)
Revenue/GDP*Account	0.070	-0.006			0.187	0.067
	(0.155)	(0.087)			(0.270)	(0.150)
Budget deficit/GDP	-0.850	-0.617	-0.729	-1.165		
	(1.355)	(1.151)	(1.443)	(1.199)		
Budget Deficit*Account	-0.117	-0.073	-0.187	-0.067		
	(0.246)	(0.137)	(0.270)	(0.150)		
Account(ability)	-7.112	-2.634	-7.112	-2.634	-7.112	-2.634
	(4.411)	(2.349)	(4.411)	(2.349)	(4.411)	(2.349)
Initial GDP p.c. (log)	-8.215***	-9.083***	-8.215***	-9.083***	-8.215***	-9.083***
	(2.837)	(2.809)	(2.837)	(2.809)	(2.837)	(2.809)
Initial level of schooling	2.864**	2.343*	2.864**	2.343*	2.864**	2.343*
	(1.413)	(1.228)	(1.413)	(1.228)	(1.413)	(1.228)
Private investment/GDP	1.556***	1.656***	1.556***	1.656***	1.556***	1.656***
	(0.447)	(0.427)	(0.447)	(0.427)	(0.447)	(0.427)
Population growth	-7.235**	-6.786***	-7.235**	-6.786***	-7.235**	-6.786***
	(2.936)	(2.486)	(2.936)	(2.486)	(2.936)	(2.486)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Democ	Const	Democ	Const	Democ
Observations	225	225	225	225	225	225
No. of countries	80	80	80	80	80	80
No. of instruments	74	75	74	75	7	75
Arellano-Bond AR(1), p-value	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond AR(2), p-value	0.06	0.07	0.06	0.07	0.06	0.07
Hansen, p-value	0.96	0.89	0.96	0.88	0.96	0.93
Diff Hansen 1, p-value	1.00	0.93	1.00	0.92	1.00	0.97
Diff Hansen 2, p-value	0.62	0.26	0.39	0.19	0.88	0.43

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part.

6. Estimation results with “freedom of the press" as an institution proxy

Table 5: Role of government accountability using “freedom of the press" as a proxy

	Interactions with accountability level			With accountability and income levels			With accountability and enforcement levels		
Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Capital spend*Highacc	6.977**	7.344***	5.901**						
	(2.668)	(2.537)	(2.745)						
Capital spend*Lowacc	2.650*	3.260**	1.088						
	(1.496)	(1.484)	(1.254)						
Capital spend*Highinc*Highacc				7.114**	7.270***	5.884**			
				(2.810)	(2.700)	(2.783)			
Capital spend*Highinc*Lowacc				0.450	0.939	-1.025			
				(2.165)	(2.038)	(2.317)			
Capital spend*Lowinc*Highacc				7.789**	7.945***	6.558**			
				(2.952)	(2.775)	(3.150)			
Capital spend*Lowinc*Lowacc				2.477**	2.966**	1.002			
				(1.147)	(1.209)	(1.015)			
Capital spend*Highenf*Highacc							7.995**	8.329**	6.915*
							(3.573)	(3.511)	(3.731)
Capital spend*Highenf*Lowacc							2.352	2.941*	0.856
							(1.694)	(1.704)	(1.619)
Capital spend*Lowenf*Highacc							6.482**	6.816**	5.402*
							(2.988)	(2.767)	(2.953)
Capital spend*Lowenf*Lowacc							2.409	2.998*	0.913
							(1.701)	(1.697)	(1.539)
Current spend*Highacc		0.367	-1.076		0.156	-1.230*		0.334	-1.079
		(0.277)	(0.672)		(0.317)	(0.657)		(0.344)	(0.700)
Current spend*Lowacc		0.609**	-1.562**		0.489*	-1.475*		0.590**	-1.496**
		(0.266)	(0.778)		(0.289)	(0.791)		(0.279)	(0.729)
Revenue*Highacc	0.367		1.443**	0.156		1.387**	0.334		1.414**
	(0.277)		(0.670)	(0.317)		(0.681)	(0.344)		(0.634)
Revenue*Lowacc	0.609**		2.172***	0.489*		1.964**	0.590**		2.085***
	(0.266)		(0.784)	(0.289)		(0.889)	(0.279)		(0.721)
Budget deficit*Highacc	-1.076	-1.443**		-1.230*	-1.387**		-1.079	-1.414**	
	(0.672)	(0.670)		(0.657)	(0.681)		(0.700)	(0.634)	
Budget deficit*Lowacc	-1.562**	-2.172***		-1.475*	-1.964**		-1.496**	-2.085***	
	(0.778)	(0.784)		(0.791)	(0.889)		(0.729)	(0.721)	

Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Initial GDP p.c. (log)	-12.083***	-12.083***	-12.083***	-9.443*	-9.443*	-9.443*	-11.755**	-11.755**	-11.755**
	(3.194)	(3.194)	(3.194)	(4.777)	(4.777)	(4.777)	(4.712)	(4.712)	(4.712)
Initial level of schooling	2.515*	2.515*	2.515*	2.420*	2.420*	2.420*	2.501*	2.501*	2.501*
	(1.366)	(1.366)	(1.366)	(1.228)	(1.228)	(1.228)	(1.457)	(1.457)	(1.457)
Private investment/GDP	1.642***	1.642***	1.642***	1.413***	1.413***	1.413***	1.605***	1.605***	1.605***
	(0.468)	(0.468)	(0.468)	(0.493)	(0.493)	(0.493)	(0.399)	(0.399)	(0.399)
Population growth	-6.258**	-6.258**	-6.258**	-6.173***	-6.173***	-6.173***	-5.457*	-5.457*	-5.457*
	(2.711)	(2.711)	(2.711)	(2.120)	(2.120)	(2.120)	(2.855)	(2.855)	(2.855)
Financing source	Cur spend	Revenue	Deficit	Cur spend	Revenue	Deficit	Cur spend	Revenue	Deficit
Observations	228	228	228	228	228	228	227	227	227
No. of countries	80	80	80	80	80	80	79	79	79
No. of instruments	69	69	69	79	79	79	79	79	79
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Arellano-Bond AR(2), p-value	0.20	0.20	0.20	0.15	0.15	0.15	0.19	0.19	0.19
Hansen, p-value	0.76	0.71	0.74	0.97	0.95	0.96	0.98	0.97	0.99
Diff Hansen 1, p-value	0.86	0.82	0.84	0.99	0.99	0.99	1.00	1.00	1.00
Diff Hansen 2, p-value	0.35	0.49	0.45	0.37	0.20	0.32	0.70	0.52	1.00
Wald Cap spend, p-value	0.09	0.08	0.06						
Wald Cur spend, p-value		0.35	0.59						
Wald Cap spend, Highacc, Income				0.81	0.81	0.81			
Wald Cap spend, Lowacc, Income				0.39	0.39	0.39			
Wald Cap spend, Highacc, Enforcement							0.59	0.59	0.59
Wald Cap spend, Lowacc, Enforcement							0.98	0.98	0.98

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. Wald, Cap spend, Highacc (Lowacc), Income tests the equality of coefficients on capital spending across different income levels for countries with accountable (unaccountable) governments. Wald, Cap spend, Highacc (Lowacc), Enforcement tests the equality of coefficients on capital spending across different law enforcement levels for countries with accountable (unaccountable) governments.

The media freedom (as a proxy for government accountability) dummy is created as follows. Originally, the levels of broadcast and print media were classified into “not free”, “partly free”, and “free”, from 1979 onwards annually. First, we assigned 0, 1, and 2 to each category, respectively. Second, to make one aggregate index, we merged the broadcast and print indices, giving the precedence to the former (this choice matters little because the correlation between them is 0.96). Third, we created dummies, using the median of national averages of the index from 1979 to 2010 for the 80 countries (corresponding to the reference analyses) as a cut-off.

7. Growth effects of different components of current spending

This section sheds further light on the growth effects of current spending in general, without institutions taken into account. In particular, as discussed in the paper, economic theory tends to suggest that certain current spending components, such as operations and maintenance (O&M) spending and wage payments in public education, may have a distinct growth-promoting effect. While it is difficult to test this hypothesis directly (due to the scarcity of such highly disaggregated data for a wide panel of countries), we still conduct related analyses to the extent that the available data permits. Specifically, given that GFS contains O&M spending as a part of "Use of goods and services", and wage payments in the public education sector as a part of "Compensation of employees", we isolate these components from the rest of current spending, and examine their growth effects. Although these wider categories are not necessarily good proxies for the narrow/specific categories of interest, the results may still be useful.

Tables 6 and 7 replicate Table 2 of the paper, by isolating "Use of goods and services" and "Compensation of employees", respectively. Regarding the former, although its growth effect does not appear to be particularly strong, it is still strong enough to cancel out the (possibly) growth-reducing effects of an increase in revenue and deficits. As for the latter, its effect is significantly stronger than the one of the rest of current spending, and stronger than the one of an increase in revenue as well.

Table 6: Disaggregate current spending into Use of goods & services and the rest

Regressors	(1)	(2)	(3)	(4)
Cap spend/GDP	2.471	2.522	2.946*	1.232
	(1.848)	(1.598)	(1.519)	(1.551)
Use of goods & services spend/GDP		0.051	0.476	-1.239
		(1.136)	(1.064)	(1.272)
Rest of cur spend/GDP	-0.051		0.425	-1.290**
	(1.136)		(0.312)	(0.615)
Revenue/GDP	0.476	0.425		1.715***
	(1.064)	(0.312)		(0.503)
Deficit/GDP	-1.239	-1.290**	-1.715***	
	(1.272)	(0.615)	(0.503)	
Initial GDP p.c.	-11.618***	-11.618***	-11.618***	-11.618***
	(3.050)	(3.050)	(3.050)	(3.050)
Initial Schooling	2.000	2.000	2.000	2.000
	(1.488)	(1.488)	(1.488)	(1.488)
Private inv/GDP	2.171***	2.171***	2.171***	2.171***
	(0.614)	(0.614)	(0.614)	(0.614)
Pop growth	-6.253*	-6.253*	-6.253*	-6.253*
	(3.478)	(3.478)	(3.478)	(3.478)
Financing source	Use of goods	Rest of cur	Revenue	Deficit
Observations	211	211	211	211
No. of countries	78	78	78	78
No. of instruments	57	57	57	57
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01
Arellano-Bond AR(2), p-value	0.11	0.11	0.11	0.11
Hansen, p-value	0.49	0.74	0.74	0.74
Diff Hansen 1, p-value	0.57	0.86	0.86	0.86
Diff Hansen 2, p-value	0.05	0.46	0.46	0.46

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part.

Table 7: Disaggregate current spending into Compensation of employees and the rest

Regressors	(1)	(2)	(3)	(4)
Cap spend/GDP	1.226	2.811	3.233*	1.484
	(1.873)	(1.721)	(1.674)	(1.807)
Compensation of employees/GDP		1.584*	2.006**	0.258
		(0.831)	(0.793)	(0.910)
Rest of cur spend/GDP	-1.584*		0.422	-1.326**
	(0.831)		(0.335)	(0.635)
Revenue/GDP	2.006**	0.422		1.748***
	(0.793)	(0.335)		(0.527)
Deficit/GDP	0.258	-1.326**	-1.748***	
	(0.910)	(0.635)	(0.527)	
Initial GDP p.c.	-13.437***	-13.437***	-13.437***	-13.437***
	(3.263)	(3.263)	(3.263)	(3.263)
Initial Schooling	3.271**	3.271**	3.271**	3.271**
	(1.632)	(1.632)	(1.632)	(1.632)
Private inv/GDP	2.284***	2.284***	2.284***	2.284***
	(0.468)	(0.468)	(0.468)	(0.468)
Pop growth	-6.498**	-6.498**	-6.498**	-6.498**
	(3.104)	(3.104)	(3.104)	(3.104)
Financing source	Compensation	Rest of cur	Revenue	Deficit
Observations	209	209	209	209
No. of countries	76	76	76	76
No. of instruments	57	57	57	57
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01
Arellano-Bond AR(2), p-value	0.05	0.05	0.05	0.05
Hansen, p-value	0.51	0.51	0.51	0.51
Diff Hansen 1, p-value	0.61	0.61	0.61	0.61
Diff Hansen 2, p-value	0.19	0.19	0.19	0.19

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part.

8. Estimations using proxies of "passive waste"

Here, we check the possibility that "passive waste", i.e., inefficiencies in government spending caused by officials' inability, lack of incentives, or excessive bureaucracy, may also play an important role in the capital spending-growth nexus.

While examining the possible role of passive waste in the nexus at an international scale is not straightforward (because of the difficulty of finding suitable proxies of passive waste), we still attempt to shed some light on its role, by regarding *Bureaucratic quality* (from ICRG) and *Government Effectiveness* (from WGI-WB) as potential (though still poor) proxies.[2] Specifically, we estimate the model of Table 3 of the paper, interacting the fiscal variables with high and low quality of bureaucracy/government effectiveness.

Table 8 shows the results. As highlighted by the Wald test results regarding the equality of coefficients on capital spending across high and low bureaucracy/government effectiveness, there does not appear to be a significant difference in the growth effects of capital spending across them. Thus, the tentative indication is that "passive" waste may not be as important as "active" waste, inefficiencies caused by officials' rent-seeking behaviour, in the capital spending-growth nexus, at least in the international context.

[2] The former measures the strength and expertise of the bureaucracy to govern without interruptions in government services in the event of a change in government, while the latter reflects various aspects such as the quality of public services, the quality of civil service, and the extent to which it is independent from political pressures. We classify countries using all the available, though limited, data over the sample period of 1970-2010 (Bureaucratic quality is available from 1984, while government effectiveness from 1996).

Table 8: Role of passive waste, using bureaucratic quality and government effectiveness as proxies

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Cap spend*Highquality	6.755*	3.410	7.428*	4.018*	5.454	2.665
	(4.004)	(2.293)	(3.975)	(2.184)	(4.264)	(2.375)
Cap spend*Lowquality	2.111	3.714*	2.999**	3.782**	1.162	1.625
	(1.660)	(2.191)	(1.467)	(1.895)	(1.519)	(1.847)
Cur spend*Highquality			0.673**	0.608**	-1.301	-0.745
			(0.266)	(0.270)	(0.950)	(0.667)
Cur spend*Lowquality			0.888*	0.068	-0.949	-2.090*
			(0.447)	(0.507)	(0.789)	(1.165)
Revenue*Highquality	0.673**	0.608**			1.974**	1.352**
	(0.266)	(0.270)			(0.951)	(0.588)
Revenue*Lowquality	0.888*	0.068			1.837***	2.158*
	(0.447)	(0.507)			(0.543)	(1.142)
Deficit*Highquality	-1.301	-0.745	-1.974**	-1.352**		
	(0.950)	(0.667)	(0.951)	(0.588)		
Deficit*Lowquality	-0.949	-2.090*	-1.837***	-2.158*		
	(0.789)	(1.165)	(0.543)	(1.142)		
Initial GDP p.c.	-11.264***	-15.498***	-11.264***	-15.498***	-11.264***	-15.498***
	(2.752)	(3.012)	(2.752)	(3.012)	(2.752)	(3.012)
Initial Schooling	1.617	1.760	1.617	1.760	1.617	1.760
	(1.584)	(1.333)	(1.584)	(1.333)	(1.584)	(1.333)
Private inv/GDP	1.976***	2.191***	1.976***	2.191***	1.976***	2.191***
	(0.585)	(0.466)	(0.585)	(0.466)	(0.585)	(0.466)
Pop growth	-5.154	-4.344	-5.154	-4.344	-5.154	-4.344
	(3.457)	(3.166)	(3.457)	(3.166)	(3.457)	(3.166)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Quality proxy	BureauQ	GovEffect	BureauQ	GovEffect	BureauQ	GovEffect
Observations	217	228	217	228	217	228
No. of countries	75	80	75	80	75	80
No. of instruments	63	65	63	65	63	65
Arellano-Bond AR(1), p-value	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond AR(2), p-value	0.15	0.40	0.15	0.40	0.15	0.40
Hansen, p-value	0.63	0.75	0.58	0.75	0.63	0.75
Diff Hansen 1, p-value	0.67	0.85	0.61	0.85	0.67	0.85
Diff Hansen 2, p-value	0.63	1.00	0.44	0.87	0.63	0.88
Wald Cap spend, p-value	0.25	0.92	0.24	0.93	0.28	0.68
Wald Cur spend, p-value			0.56	0.17	0.73	0.28

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different quality levels.

9. Estimations which exclude the most fiscally decentralized countries

Table 9: Without the Top 5 Decentralized Countries

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Cap spend*Highacc	7.868***	8.312***	8.326***	8.756***	6.997***	7.540**
	(2.380)	(2.948)	(2.297)	(2.854)	(2.502)	(2.981)
Cap spend*Lowacc	3.260*	3.033*	3.997**	3.788**	1.509	2.008
	(1.728)	(1.797)	(1.651)	(1.669)	(1.337)	(1.363)
Cur spend*Highacc			0.459*	0.445	-0.871	-0.772
			(0.263)	(0.282)	(0.630)	(0.625)
Cur spend*Lowacc			0.737**	0.755*	-1.751*	-1.025
			(0.286)	(0.404)	(0.879)	(1.036)
Revenue*Highacc	0.459*	0.445			1.329**	1.216*
	(0.263)	(0.282)			(0.639)	(0.636)
Revenue*Lowacc	0.737**	0.755*			2.488***	1.780*
	(0.286)	(0.404)			(0.868)	(0.920)
Deficit*Highacc	-0.871	-0.772	-1.329**	-1.216*		
	(0.630)	(0.625)	(0.639)	(0.636)		
Deficit*Lowacc	-1.751*	-1.025	-2.488***	-1.780*		
	(0.879)	(1.036)	(0.868)	(0.920)		
Initial GDP p.c.	-11.206***	-11.598***	-11.206***	-11.598***	-11.206***	-11.598***
	(3.293)	(3.152)	(3.293)	(3.152)	(3.293)	(3.152)
Initial Schooling	1.852	2.392	1.852	2.392	1.852	2.392
	(1.542)	(1.511)	(1.542)	(1.511)	(1.542)	(1.511)
Private inv/GDP	1.669***	1.851***	1.669***	1.851***	1.669***	1.851***
	(0.540)	(0.507)	(0.540)	(0.507)	(0.540)	(0.507)
Pop growth	-6.563**	-6.053*	-6.563**	-6.053*	-6.563**	-6.053*
	(2.876)	(3.273)	(2.876)	(3.273)	(2.876)	(3.273)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	217	217	217	217	217	217
No. of countries	75	75	75	75	75	75
No. of instruments	69	65	69	65	69	65
Arellano-Bond AR(1), p-value	0.01	0.00	0.01	0.00	0.01	0.00
Arellano-Bond AR(2), p-value	0.40	0.42	0.40	0.42	0.40	0.42
Hansen, p-value	0.82	0.85	0.76	0.84	0.82	0.89
Diff Hansen 1, p-value	0.79	0.77	0.69	0.76	0.79	0.85
Diff Hansen 2, p-value	0.41	0.81	0.19	0.77	0.39	1.00
Wald Cap spend, p-value	0.06	0.11	0.06	0.10	0.02	0.06
Wald Cur spend, p-value			0.29	0.40	0.43	0.82

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. The 5 countries excluded are Guatemala, Uganda, Canada, Colombia, and Denmark.

Table 10: Without the Top 10 Decentralized Countries[3]

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Cap spend*Highacc	8.444***	9.015***	8.916***	9.430***	7.500***	8.242**
	(2.426)	(3.166)	(2.356)	(3.094)	(2.525)	(3.234)
Cap spend*Lowacc	3.736*	3.377*	4.562**	4.215**	1.832	2.124
	(2.046)	(2.017)	(1.960)	(1.957)	(1.517)	(1.549)
Cur spend*Highacc			0.472*	0.414	-0.945	-0.774
			(0.238)	(0.272)	(0.591)	(0.626)
Cur spend*Lowacc			0.826**	0.838*	-1.904*	-1.253
			(0.322)	(0.421)	(0.973)	(1.117)
Revenue*Highacc	0.472*	0.414			1.417**	1.188*
	(0.238)	(0.272)			(0.625)	(0.629)
Revenue*Lowacc	0.826**	0.838*			2.730***	2.091**
	(0.322)	(0.421)			(0.902)	(1.008)
Deficit*Highacc	-0.945	-0.774	-1.417**	-1.188*		
	(0.591)	(0.626)	(0.625)	(0.629)		
Deficit*Lowacc	-1.904*	-1.253	-2.730***	-2.091**		
	(0.973)	(1.117)	(0.902)	(1.008)		
Initial GDP p.c.	-11.241***	-11.612***	-11.241***	-11.612***	-11.241***	-11.612***
	(3.165)	(3.224)	(3.165)	(3.224)	(3.165)	(3.224)
Initial Schooling	2.013	2.915**	2.013	2.915**	2.013	2.915**
	(1.670)	(1.431)	(1.670)	(1.431)	(1.670)	(1.431)
Private inv/GDP	1.579***	1.759***	1.579***	1.759***	1.579***	1.759***
	(0.534)	(0.490)	(0.534)	(0.490)	(0.534)	(0.490)
Pop growth	-7.425**	-6.467*	-7.425**	-6.467*	-7.425**	-6.467*
	(3.192)	(3.540)	(3.192)	(3.540)	(3.192)	(3.540)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	200	200	200	200	200	200
No. of countries	70	70	70	70	70	70
No. of instruments	69	65	69	65	69	65
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond AR(2), p-value	0.38	0.40	0.38	0.40	0.38	0.40
Hansen, p-value	0.87	0.86	0.86	0.84	0.83	0.83
Diff Hansen 1, p-value	0.84	0.77	0.82	0.74	0.76	0.72
Diff Hansen 2, p-value	0.03	0.15	0.02	0.42	0.01	0.21
Wald Cap spend, p-value	0.07	0.10	0.07	0.09	0.02	0.04
Wald Cur spend, p-value			0.21	0.28	0.38	0.69

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. The 10 countries excluded are Guatemala, Uganda, Canada, Colombia, Denmark, India, Japan, Russia, Germany, and Australia.

[3] The caveat with the analyses without the top 10 decentralized countries is that when "constraint" is used as a proxy, there is a doubt on the validity of instruments used in the system GMM estimators (see p-values of Diff Hansen 2).

10. Estimations excluding ex-Soviet and ex-socialist countries

Table 11: Without ex-Soviet States

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Cap spend*Highacc	6.632***	9.289***	7.123***	9.738***	5.801**	8.759**
	(2.307)	(3.379)	(2.224)	(3.293)	(2.533)	(3.515)
Cap spend*Lowacc	2.532	2.883	3.374*	3.895**	0.851	1.680
	(1.831)	(1.977)	(1.759)	(1.941)	(1.378)	(1.518)
Cur spend*Highacc			0.491**	0.448	-0.831	-0.531
			(0.241)	(0.286)	(0.595)	(0.618)
Cur spend*Lowacc			0.842***	1.012**	-1.681*	-1.203
			(0.318)	(0.424)	(0.903)	(1.064)
Revenue*Highacc	0.491**	0.448			1.322**	0.979
	(0.241)	(0.286)			(0.620)	(0.619)
Revenue*Lowacc	0.842***	1.012**			2.523***	2.215**
	(0.318)	(0.424)			(0.848)	(0.985)
Deficit*Highacc	-0.831	-0.531	-1.322**	-0.979		
	(0.595)	(0.618)	(0.620)	(0.619)		
Deficit*Lowacc	-1.681*	-1.203	-2.523***	-2.215**		
	(0.903)	(1.064)	(0.848)	(0.985)		
Initial GDP p.c.	-10.834***	-12.498***	-10.834***	-12.498***	-10.834***	-12.498***
	(3.150)	(3.437)	(3.150)	(3.437)	(3.150)	(3.437)
Initial Schooling	2.416	3.511**	2.416	3.511**	2.416	3.511**
	(1.472)	(1.544)	(1.472)	(1.544)	(1.472)	(1.544)
Private inv/GDP	1.595***	1.713***	1.595***	1.713***	1.595***	1.713***
	(0.506)	(0.516)	(0.506)	(0.516)	(0.506)	(0.516)
Pop growth	-5.964**	-6.996**	-5.964**	-6.996**	-5.964**	-6.996**
	(2.686)	(3.382)	(2.686)	(3.382)	(2.686)	(3.382)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	220	220	220	220	220	220
No. of countries	75	75	75	75	75	75
No. of instruments	69	65	69	65	69	65
Arellano-Bond AR(1), p-value	0.01	0.00	0.01	0.00	0.01	0.00
Arellano-Bond AR(2), p-value	0.24	0.41	0.24	0.41	0.24	0.41
Hansen, p-value	0.89	0.82	0.91	0.80	0.88	0.81
Diff Hansen 1, p-value	0.90	0.76	0.93	0.73	0.89	0.75
Diff Hansen 2, p-value	1.00	0.72	1.00	0.60	1.00	0.71
Wald Cap spend, p-value	0.10	0.08	0.10	0.08	0.04	0.03
Wald Cur spend, p-value			0.22	0.16	0.42	0.55

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. The 5 ex-Soviet states excluded are Estonia, Latvia, Lithuania, Russia, and Ukraine.

Table 12: Without ex-Soviet and ex-socialist countries

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Cap spend*Highacc	8.140***	7.982***	8.699***	8.457***	7.240**	7.194**
	(2.944)	(3.004)	(2.903)	(2.933)	(3.238)	(3.217)
Cap spend*Lowacc	1.555	2.626	2.937	3.599**	1.034	0.965
	(1.844)	(1.851)	(1.791)	(1.750)	(1.525)	(1.422)
Cur spend*Highacc			0.559**	0.475**	-0.900	-0.788
			(0.260)	(0.224)	(0.644)	(0.598)
Cur spend*Lowacc			1.383***	0.973**	-0.521	-1.661*
			(0.458)	(0.409)	(1.028)	(0.916)
Revenue*Highacc	0.559**	0.475**			1.459**	1.263*
	(0.260)	(0.224)			(0.678)	(0.642)
Revenue*Lowacc	1.383***	0.973**			1.903**	2.634***
	(0.458)	(0.409)			(0.895)	(0.809)
Deficit*Highacc	-0.900	-0.788	-1.459**	-1.263*		
	(0.644)	(0.598)	(0.678)	(0.642)		
Deficit*Lowacc	-0.521	-1.661*	-1.903**	-2.634***		
	(1.028)	(0.916)	(0.895)	(0.809)		
Initial GDP p.c.	-11.583***	-13.054***	-11.583***	-13.054***	-11.583***	-13.054***
	(3.752)	(3.305)	(3.752)	(3.305)	(3.752)	(3.305)
Initial Schooling	3.907**	4.114***	3.907**	4.114***	3.907**	4.114***
	(1.571)	(1.219)	(1.571)	(1.219)	(1.571)	(1.219)
Private inv/GDP	1.596***	1.570***	1.596***	1.570***	1.596***	1.570***
	(0.487)	(0.456)	(0.487)	(0.456)	(0.487)	(0.456)
Pop growth	-6.640**	-6.437**	-6.640**	-6.437**	-6.640**	-6.437**
	(2.529)	(2.704)	(2.529)	(2.704)	(2.529)	(2.704)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Acountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	208	208	208	208	208	208
Number of countries	67	67	67	67	67	67
No. of instruments	67	65	67	65	67	65
Arellano-Bond AR(1), p-value	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond AR(2), p-value	0.22	0.28	0.22	0.28	0.22	0.28
Hansen, p-value	0.96	0.80	0.96	0.80	0.95	0.81
Diff Hansen 1, p-value	0.97	0.85	0.98	0.86	0.97	0.87
Diff Hansen 2, p-value	1.00	0.91	1.00	0.83	0.99	0.98
Wald Cap spend, p-value	0.04	0.12	0.04	0.12	0.03	0.05
Wald Cur spend, p-value			0.04	0.22	0.74	0.40

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels. Five ex-Soviet countries (Estonia, Latvia, Lithuania, Russia, and Ukraine) and 8 ex-socialist countries (Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, and Slovenia) were excluded from the sample.

11. Estimations which exclude outliers

As an additional robustness check, we re-estimated the model of Table 3 of the paper, by excluding possible outliers. This is done in two ways.

First, we address the possibility that the unification process of the two GFS manuals leaves unusual changes in spending. Specifically, we examined if there are any unusual “jumps" in both capital and current spending series over time. Investigating the distributions of changes between adjacent 8-year periods in both series (when they are unbalanced, the interpolated values are used), we detected one distinct outlier in the capital spending series (a fall by almost 10 percentage points in Gabon, between the 2nd and 3rd 8-year periods). Thus, we eliminated this jump from the series (by dropping the country's capital spending figure in the 3rd period). To be symmetric, we also eliminated the highest rise of 3.3 percentage points across periods in this spending. Meanwhile, such a strong outlier was not found in the current spending series, so that we did not exclude any observation from this spending. Table 13 shows the results, confirming that our conclusions are robust to this check.

Second, acknowledging that three observations for Botswana stand out in Figure 1 of the paper as possible outliers in the high accountability sample, we further investigate the influence of those apparent outliers in the context of a regression analysis. Specifically, we re-estimated the models of Table 3 of the paper, excluding Botswana from the sample. The results are shown in Table 14. The pattern of statistical significance of the coefficients associated with the fiscal variables remains essentially the same, but the Wald tests fail to reject the equality of the coefficients of capital spending across accountability levels. As emphasized in the paper, this can be seen as an evidence undermining the proposition that government accountability plays a key role in the public capital spending-growth nexus.

Table 13: Without unusual "jumps" in disaggregated spending series

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Capital spend*Highacc	6.972***	7.935***	7.327***	8.327***	5.931**	7.016**
	(2.215)	(2.923)	(2.147)	(2.842)	(2.421)	(3.052)
Capital spend*Lowacc	1.569	1.266	2.349	2.251	-0.129	0.476
	(1.851)	(1.945)	(1.762)	(1.843)	(1.500)	(1.547)
Current spend*Highacc			0.355	0.391	-1.041	-0.919
			(0.253)	(0.274)	(0.635)	(0.669)
Current spend*Lowacc			0.780**	0.985**	-1.698*	-0.789
			(0.313)	(0.408)	(0.873)	(0.975)
Revenue*Highacc	0.355	0.391			1.396**	1.310*
	(0.253)	(0.274)			(0.649)	(0.669)
Revenue*Lowacc	0.780**	0.985**			2.478***	1.774**
	(0.313)	(0.408)			(0.843)	(0.886)
Budget deficit*Highacc	-1.041	-0.919	-1.396**	-1.310*		
	(0.635)	(0.669)	(0.649)	(0.669)		
Budget deficit*Lowacc	-1.698*	-0.789	-2.478***	-1.774**		
	(0.873)	(0.975)	(0.843)	(0.886)		
Initial GDP p.c. (log)	-10.096***	-10.307***	-10.096***	-10.307***	-10.096***	-10.307***
	(3.217)	(3.235)	(3.217)	(3.235)	(3.217)	(3.235)
Initial level of schooling	1.518	2.200	1.518	2.200	1.518	2.200
	(1.466)	(1.515)	(1.466)	(1.515)	(1.466)	(1.515)
Private investment/GDP	1.469***	1.701***	1.469***	1.701***	1.469***	1.701***
	(0.507)	(0.501)	(0.507)	(0.501)	(0.507)	(0.501)
Population growth	-6.527**	-6.636**	-6.527**	-6.636**	-6.527**	-6.636**
	(2.688)	(3.147)	(2.688)	(3.147)	(2.688)	(3.147)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	226	226	226	226	226	226
No. of countries	80	80	80	80	80	80
No. of instruments	69	65	69	65	69	65
Arellano-Bond AR(1), p-value	0.01	0.00	0.01	0.00	0.01	0.00
Arellano-Bond AR(2), p-value	0.19	0.24	0.19	0.24	0.19	0.24
Hansen, p-value	0.62	0.67	0.63	0.63	0.63	0.66
Diff Hansen 1, p-value	0.63	0.52	0.65	0.46	0.65	0.50
Diff Hansen 2, p-value	0.65	0.30	0.70	0.20	0.70	0.27
Wald Cap spend, p-value	0.03	0.05	0.03	0.04	0.01	0.03
Wald Cur spend, p-value			0.12	0.11	0.52	0.90

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels.

Table 14: Without Botswana

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Capital spend*Highacc	5.792**	6.790*	6.371**	7.361**	4.881*	5.828*
	(2.855)	(3.445)	(2.852)	(3.456)	(2.907)	(3.468)
Capital spend*Lowacc(	2.364	1.730	3.234**	2.737*	0.469	0.803
	(1.669)	(1.690)	(1.578)	(1.583)	(1.382)	(1.385)
Current spend*Highacc			0.578**	0.571**	-0.911	-0.962
			(0.267)	(0.281)	(0.707)	(0.776)
Current spend*Lowacc			0.870***	1.007**	-1.894**	-0.927
			(0.309)	(0.410)	(0.812)	(0.962)
Revenue*Highacc	0.578**	0.571**			1.489*	1.533*
	(0.267)	(0.281)			(0.777)	(0.810)
Revenue*Lowacc	0.870***	1.007**			2.765***	1.934**
	(0.309)	(0.410)			(0.789)	(0.852)
Budget deficit*Highacc	-0.911	-0.962	-1.489*	-1.533*		
	(0.707)	(0.776)	(0.777)	(0.810)		
Budget deficit*Lowacc	-1.894**	-0.927	-2.765***	-1.934**		
	(0.812)	(0.962)	(0.789)	(0.852)		
Initial GDP p.c. (log)	-11.361***	-11.442***	-11.361***	-11.442***	-11.361***	-11.442***
	(3.232)	(3.226)	(3.232)	(3.226)	(3.232)	(3.226)
Initial level of schooling	1.659	2.081	1.659	2.081	1.659	2.081
	(1.433)	(1.574)	(1.433)	(1.574)	(1.433)	(1.574)
Private investment/GDP	1.576***	1.850***	1.576***	1.850***	1.576***	1.850***
	(0.534)	(0.506)	(0.534)	(0.506)	(0.534)	(0.506)
Population growth	-6.606**	-6.243**	-6.606**	-6.243**	-6.606**	-6.243**
	(2.825)	(3.001)	(2.825)	(3.001)	(2.825)	(3.001)
Financing source	Cur spend	Cur spend	Revenue	Revenue	Deficit	Deficit
Accountability proxy	Const	Voice	Const	Voice	Const	Voice
Observations	225	225	225	225	225	225
No. of countries	79	79	79	79	79	79
No. of instruments	69	65	69	65	69	65
Arellano-Bond AR(1), p-value	0.01	0.00	0.01	0.00	0.01	0.00
Arellano-Bond AR(2), p-value	0.20	0.23	0.20	0.23	0.20	0.23
Hansen, p-value	0.77	0.84	0.78	0.85	0.77	0.84
Diff Hansen 1, p-value	0.85	0.93	0.86	0.94	0.84	0.93
Diff Hansen 2, p-value	0.48	0.90	0.47	0.98	0.43	0.93
Wald Cap spend, p-value	0.23	0.17	0.25	0.18	0.12	0.14
Wald Cur spend, p-value			0.26	0.21	0.31	0.98

Notes: The dependent variable is the GDP per capita growth rate over 8 years. System GMM estimations for dynamic panel data models. Constant and time dummies are not shown for brevity. All explanatory variables were treated as endogenous except for initial GDP p.c. and initial schooling years, which were treated as predetermined. Orthogonal deviation was used to transform variables. Only one lag was used as an internal instrument to reduce the number of instruments. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Diff Hansen 1 tests the exogeneity of the instruments used in the level part (of the system) as a whole. Diff Hansen 2 tests the exogeneity of the lagged level of output used as an instrument in the level part. Wald, Cap spend (Cur spend) tests the equality of coefficients on capital (current) spending across different accountability levels.

12. References

Barro R., Lee, J.W. (2010). "A new data set of educational attainment in the world, 1950-2010." *Journal of Development Economics* 104:184-198.

Beck, T., Clarke, G., Groff, A., Keefer, P., Walsh, P. (2001). "New tools in comparative political economy: The database of political institutions." *World Bank Economic Review* 15, 165-176. Dataset downloadable at: http://go.worldbank.org/2EAGGLRZ40.

Dunham, J., Nelson, B., Aghekyan, E. (2015). Freedom of the press 2015: Harsh laws and violence drive global decline, Freedom House. Dataset downloadable at: https://freedomhouse.org

Feenstra, R.C., Inklaar, R., Timmer, M.P. (2015). "The Next Generation of the Penn World Table" *American Economic Review* 105(10): 3150-3182. Dataset downloadable at: www.ggdc.net/pwt

Gwartney, J., Lawson, R., Hall, J. (2013). *Economic Freedom of the World: 2013 Annual Report*, Fraser Institute. Vancouver, BC. Dataset downloadable at: http://www.freetheworld.com/release.html

Kaufmann, D., Kraay, A., Mastruzzi, M. (2010). "The worldwide governance indicators: Methodology and analytical issues." World Bank, Policy Research Working Paper 5430, doi:10.1596/1813-9450-5430. Dataset downloadable at: http://www.govindicators.org/

Marshall, M., Gur, T.R., Jaggers, K. (2013). Polity IV Project: Political Regime Characteristics and Transitions, 1800-2013. Center for Systemic Peace. Dataset downloadable at: http://www.systemicpeace.org/polity4