Appendix

Fiscal Space and Government-Spending & Tax-Rate Cyclicality Patterns:
A Cross-Country Comparison, 1960-2016

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Appendix

Table A1. Variable description and source

Variable	Description	Source/Methodology
Data used in the time series regression by country and panel regression		
dlRGS	Growth rate of real government spending which is calculated from nominal government spending and GDP deflator.	The annual change of log(real government spending)
dlRGDP	Growth rate of real GDP which is calculated from nominal GDP and GDP deflator.	The annual change of log(real GDP)
deflator	GDP deflator.	World Bank (156 countries), time coverage: 1960-2016 Internation Monetary Fund (40 countries), time coverage: 1980-2016
NGDP	Nominal Gross Domestic Product (in millions of local currency).	World Bank (156 countries), time coverage: 1960-2016 (40 countries), time coverage: 1800-2016
NGS	Nominal government spending (in millions of local currency). In baseline results for the 1960-2016 sample, that is general government final consumption expenditure (formerly general government consumption) which includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation.	World Bank (156 countries), time coverage: 1960-2016 International Monetary Fund (40 countries), time coverage: 1980-2016
	In a scenario for the 1980-2016 sample, that is general government total expenditure which is defined as total expense plus the net acquisition of nonfinancial assets.	World Bank. Time coverage: 1980-2016
VAT	Standard value-added tax rate.	Vegh and Vuletin (2015). Time coverage: 1960-2017
PIT	Highest marginal personal income tax rate.	Vegh and Vuletin (2015). Time coverage: 1960-2017
CIT	Standard corporate tax rate.	Vegh and Vuletin (2015). Time coverage: 1960-2017
Data used in the cross-country regression		
$\hat{\beta}GS$	The time series estimated coefficient from regression of percentage change of real government spending on percentage change of real GDP, 1960-2016.	Prais-Winsten/ OLS estimations
$\hat{\beta}VAT$	The time series estimated coefficient from regression of value added tax rate on real GDP growth rate, 1960-2016.	Prais-Winsten/ OLS estimations
$\hat{\beta}PIT$	The time series estimated coefficient from regression of personal income tax rate on real GDP growth rate, 1960-2016.	Prais-Winsten/ OLS estimation
$\hat{\beta}CIT$	The time series estimated coefficient from regression of corporate income tax on real GDP growth rate, 1960-2016.	Prais-Winsten/ OLS estimation
debt	General government gross debt-to-GDP ratio, average 1960-2016. Gross debt consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. This includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable.	International Monetary Fund Time coverage: 1800-2016

debt_vol	Standard deviation of general government gross debt-to-GDP ratio, 1960-2016.	International Monetary Fund Time coverage: 1800-2016
fiscap	Limited fiscal capacity measured by public debt/tax revenue, average 1960-2016, where tax revenue refers to general government total tax revenue-to-GDP ratio, including social contributions in baseline results but excluding social contributions in robustness check.	Tax ratio from ICTD/UNU-WIDER time coverage: 1980-2016. Debt ratio from International Monetary Fund time coverage: 1800-2016
fiscap_vol	Volatility of limited fiscal capacity measured by standard deviation of public debt/tax revenue, 1960-2016	Tax ratio from ICTD/UNU-WIDER time coverage: 1980-2016. Debt ratio from International Monetary Fund time coverage: 1800-2016
lfiscap	Limited fiscal capacity measured by public debt/3-year moving average of tax revenue, average 1960-2016	Tax ratio from ICTD/UNU-WIDER time coverage: 1980-2016. Debt ratio from International Monetary Fund time coverage: 1800-2016
lfiscap_vol	Volatility of limited fiscal capacity measured by standard deviation of public debt/3-year moving average of tax revenue, 1960-2016	Tax ratio from ICTD/UNU-WIDER time coverage: 1980-2016. Debt ratio from International Monetary Fund time coverage: 1800-2016
polcon	The extent of political constraints faced by executives in implementing policy, average 1960-2016, ranging 0-1 point, higher value indicates greater political constraints	Henisz, W. J. (2002). Time coverage: 1800-2016
trade	Total exports and imports/GDP, average 1960-2016	World Bank Time coverage: 1960-2016
inf	Inflation, average 1960-2016	World Bank Time coverage: 1960-2016
GDP	GDP growth rate, average 1960-2016	World Bank Time coverage: 1960-2016
nare	The ratio of natural resources exports (including agricultural raw materials, ores and metals, fuel, and food) in total exports, average 1960-2016	World Bank Time coverage: 1960-2016
manu	The ratio of manufactured exports (including chemicals, basic manufactures, machinery and transport equipment, and miscellaneous manufactured goods, excluding non-ferrous metals) in total exports, average 1960-2016	World Bank Time coverage: 1960-2016
TAL	Total foreign assets and liabilities/GDP to measure de facto financial integration, average 1970-2011	Philip R Lane and Milesi-Ferretti (2007) Time coverage: 1970-2011
gs	Government size, measured by its consumption share of GDP, average 1960-2016	WDI (1960-2016) (163 countries) IFS (1980-2016) for Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, Maldives, Taiwan, St. Vincent and the Grenadines
CRI	Composite Risk Index, ranging 0%-100%, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016

ERI	Economic Risk Index, ranging 0%-50%, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
FRI	Financial Risk Index, ranging 0%-50%, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
PRI	Political Risk Index, ranging 0%-100%, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
govstab	Government Stability, ranging 0-12 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
socecon	Socioeconomic Conditions, ranging 0-12 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
invest	Investment Profile, ranging 0-12 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
inconflict	Internal Conflict, ranging 0-12 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
exconflict	External Conflict, ranging 0-12 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
corrupt	Corruption, ranging 0-6 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
military	Military in Politics, ranging 0-6 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
religious	Religious Tensions, ranging 0-6 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
law	Law and Order, ranging 0-6 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
ethnic	Ethnic Tensions, ranging 0-6 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
democracy	Democratic Accountability, ranging 0-6 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016
bureau	Bureaucracy Quality, ranging 0-4 point, higher point meaning lower risk	The PRS Group (2017) Time coverage: 1984-2016

Table A2. Government spending cyclicality $\widehat{\beta}GS$ by country

No.	Country	ISO	Prais-Winten			OLS (RSE)		
			Average	D = 0	D = 1	Average	D = 0	D = 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Albania	ALB	0.082	-0.225	0.365	0.088	-0.193	0.491
2	Algeria	DZA	0.963***	0.665**	1.528**	0.976***	0.638***	1.773***
3	Angola	AGO	0.854**	0.460	2.746	0.751*	0.563	1.121
4	Antigua and Barbuda	ATG	0.282	-0.055	0.910	0.311	-0.225	0.959
5	Argentina	ARG	1.352**	0.047	2.184	1.132**	-0.193	2.256*
6	Armenia	ARM	0.801***	0.646	0.943	0.840***	0.643	1.076*
7	Australia	AUS	-0.267	-0.426	#N/A	0.044	0.003	1.201
8	Austria	AUT	0.153	0.658***	#N/A	0.477**	0.812***	0.387
9	Azerbaijan	AZE	1.009***	0.861*	0.381	1.011**	0.870***	0.578
10	Bahamas, The	BHS	0.366*	0.390*	-0.229	0.311*	0.342	-0.235
11	Bahrain	BHR	1.118**	1.131**	#N/A	1.101	1.162	45.820
12	Bangladesh	BGD	2.080***	0.559	#N/A	2.229**	0.777	13.650*
13	Barbados	BRB	1.555**	0.284	4.494	1.553*	0.580	4.453
14	Belarus	BLR	0.782***	0.389	1.356	0.780*	0.401*	1.112
15	Belgium	BEL	-0.147	0.229	#N/A	0.416*	0.797***	-1.347
16	Belize	BLZ	0.442**	0.664***	#N/A	0.451**	0.653***	-1.204
17	Benin	BEN	0.703	1.720**	#N/A	0.648	1.587	-3.957
18	Bhutan	BTN	-0.550	-0.518	#N/A	-0.509	-0.419	0.000
19	Bolivia	BOL	1.022***	0.097	-0.222	0.806	0.077	-0.392
20	Botswana	BWA	0.430*	0.230	#N/A	0.524**	0.464*	0.954
21	Brazil	BRA	0.611**	0.734**	#N/A	0.607***	0.658***	0.421
22	Brunei Darussalam	BRN	-0.159	-1.054	1.406*	0.286	-1.351	3.814**
23	Bulgaria	BGR	0.335	1.024	#N/A	0.402	1.010	-0.870
24	Burkina Faso	BFA	0.987	0.771	#N/A	0.902	0.677	10.60**
25	Burundi	BDI	1.156***	1.401*	1.114	1.191***	1.577**	1.128*
26	Cabo Verde	CPV	0.263	0.424	#N/A	0.294	0.449	0.000
27	Cambodia	KHM	-0.982	-0.982	#N/A	-0.716	-0.716	0.000
28	Cameroon	CMR	0.809***	0.781***	1.752	0.825***	0.803***	1.668*
29	Canada	CAN	-0.504***	-0.471**	#N/A	0.164	0.479**	-1.084
30	Central African Republic	CAF	0.396*	0.919	0.256	0.396**	0.797	0.246***
31	Chad	TCD	0.191	-0.583	1.117	0.309	-0.119	1.260*
32	Chile	CHL	0.825***	0.558	-1.247	0.818**	0.519	0.998
33	China	CHN	0.874***	0.450**	0.734***	0.859***	0.536***	0.567
34	Colombia	COL	0.222	0.667	#N/A	0.659	0.862	0.000
35	Comoros	COM	1.854	2.121	#N/A	0.908	1.838	-2.489
36	Congo, Dem. Rep.	COD	1.901***	0.903	1.710	1.856**	0.958	1.713

37	Congo, Rep.	COG	0.223	0.115	100.700	0.222	0.122	0.801
38	Costa Rica	CRI	0.571**	0.728**	5.844	1.046**	0.749**	3.676
39	Côte d'Ivoire	CIV	1.441***	1.506***	3.023	1.442***	1.507***	1.807***
40	Croatia	HRV	0.623*	1.678	0.056	0.568*	1.752	0.100
41	Cuba	CUB	0.895***	1.203***	0.625**	0.943***	1.209***	0.587*
42	Cyprus	CYP	0.501	0.159	2.195	0.532*	0.153	2.117
43	Czech Republic	CZE	0.739***	-0.103	1.394***	0.727***	-0.102	0.860*
44	Denmark	DNK	0.153	0.474**	-0.403	0.530**	1.048***	-0.560**
45	Djibouti	DJI	1.202**	0.635	-1.407***	1.272**	0.796	-0.191
46	Dominica	DMA	-0.133	0.048	-0.823***	-0.125	0.093	0.471
47	Dominican Republic	DOM	0.789*	0.885	#N/A	1.007**	0.799	-1.417
48	Ecuador	ECU	2.424***	2.942***	#N/A	2.226***	2.710***	-1.551
49	Egypt, Arab Rep.	EGY	0.345	0.345	#N/A	0.270	0.270	0.000
50	El Salvador	SLV	0.482**	0.731	#N/A	0.499**	0.914*	1.048
51	Equatorial Guinea	GNQ	0.550*	0.716*	-1.896	0.498***	0.592***	-1.816
52	Eritrea	ERI	2.209***	1.937**	#N/A	2.293***	2.267*	-0.220
53	Ethiopia	ETH	1.419***	-0.004	2.855	1.353***	0.037	3.369**
54	Fiji	FJI	0.625**	0.524	#N/A	0.621***	0.526	-0.278
55	Finland	FIN	-0.029	-0.185	-0.741*	0.186	-0.173	-0.727
56	France	FRA	-0.147	0.523***	#N/A	0.512***	0.830***	0.858
57	Gabon	GAB	0.674**	-0.063	1.604*	0.637	-0.059	1.656**
58	Gambia, The	GMB	3.440**	0.612	#N/A	3.505**	1.193	-11.620
59	Georgia	GEO	1.322***	1.807*	0.972**	1.305***	1.583	1.349**
60	Germany	DEU	0.048	-0.038	#N/A	0.231	0.337	-0.595
61	Ghana	GHA	2.060***	1.941**	0.260	2.070***	1.973	0.016
62	Greece	GRC	0.853***	0.916***	-0.191	0.762***	0.822***	0.810
63	Grenada	GRD	0.535*	0.518	1.032	0.528**	0.543	1.012
64	Guatemala	GTM	0.794	0.226	#N/A	0.801**	0.183	-1.794
65	Guinea	GIN	-2.898**	-0.672	#N/A	-2.980**	-1.965	0.000
66	Guinea-Bissau	GNB	0.489	0.793	#N/A	0.551*	0.783	-0.369
67	Guyana	GUY	1.461***	0.751	2.867	1.424***	0.689	2.697**
68	Honduras	HND	-0.024	-0.209	-5.309	0.045	-0.098	-5.388
69	Hong Kong SAR, China	HKG	0.049	0.029	#N/A	0.107	0.082	-0.581
70	Hungary	HUN	0.086	1.329**	1.058*	0.066	1.442**	0.474
71	Iceland	ISL	0.714***	0.941***	1.082*	0.720***	0.919***	1.117**
72	India	IND	0.515**	0.423	-0.570	0.597***	0.411	-0.827
73	Indonesia	IDN	1.524***	0.916	#N/A	1.557***	1.511	3.669
74	Iran, Islamic Rep.	IRN	0.785***	0.730**	1.570***	0.820***	0.781**	1.358**
75	Iraq	IRQ	0.734***	0.899	#N/A	0.776**	0.800	0.852**
76	Ireland	IRL	-0.018	-0.018	-1.305*	0.093	0.032	-1.223
77	Israel	ISR	1.356***	1.723***	#N/A	1.285***	1.364***	0.000

78	Italy	ITA	0.205	0.410	0.144	0.672***	0.687***	-0.043
79	Jamaica	JAM	0.782***	1.797***	-0.256	0.978***	1.680***	-0.186
80	Japan	JPN	0.381***	0.582***	0.327	0.567***	0.675***	0.403**
81	Jordan	JOR	1.046***	0.835**	#N/A	1.041***	0.845	0.457*
82	Kazakhstan	KAZ	1.469***	0.689*	1.904	1.491**	0.681	2.065
83	Kenya	KEN	0.962***	1.040***	#N/A	0.968***	1.040***	-1.173
84	Korea, Rep.	KOR	-0.351	-0.550*	#N/A	0.127	0.303	3.099
85	Kuwait	KWT	0.187	-0.268	0.263	0.179	-0.280	0.653
86	Kyrgyz Republic	KGZ	1.133***	-0.902*	1.446***	1.130***	0.202	1.453***
87	Lebanon	LBN	0.163	0.347	#N/A	0.263*	0.725***	0.215
88	Lesotho	LSO	-0.200	-0.200	#N/A	-0.222	-0.222	0.000
89	Liberia	LBR	0.835	0.936	0.432	0.824***	0.920	0.416**
90	Libya	LBY	0.610*	1.225	-0.246	0.665	1.604*	-0.415
91	Luxembourg	LUX	-0.446**	-0.241	#N/A	-0.322	-0.187	-2.447**
92	Macao SAR, China	MAC	-0.142	-0.248	0.159*	-0.072	-0.204	0.056
93	Macedonia, FYR	MKD	0.659	2.064	0.816	0.213	2.115	0.541
94	Madagascar	MDG	1.477***	1.329*	0.730	1.305***	1.223	1.005*
95	Malawi	MWI	-0.796*	0.157	#N/A	-0.728	0.159	-5.269
96	Malaysia	MYS	0.270	-0.508	#N/A	0.260	-0.599	3.656
97	Maldives	MDV	-0.540***	0.265	#N/A	-0.414	0.303**	-4.807
98	Mali	MLI	0.742	0.058	-1.095	0.424	0.068	-1.261
99	Malta	MLT	0.541***	0.460***	#N/A	0.517***	0.416***	-0.503
100	Mauritania	MRT	0.388	0.000	2.182	0.329	0.194	2.445
101	Mauritius	MUS	0.638**	0.803	#N/A	0.672***	0.785	0.000
102	Mexico	MEX	1.169***	1.179***	#N/A	1.213***	1.151***	0.411
103	Moldova	MDA	1.417***	1.023	2.189***	1.337***	1.055	1.619***
104	Mongolia	MNG	1.842	0.080	12.810	1.710	-0.187	13.11*
105	Morocco	MAR	0.554**	1.076**	#N/A	0.821**	1.224**	1.400**
106	Mozambique	MOZ	0.625	0.903	-1.769	0.660	1.138	-1.632
107	Namibia	NAM	0.969*	1.027	1.423	0.982*	0.942	1.852
108	Nepal	NPL	0.549	0.236	#N/A	0.610	-0.042	-59.780
109	Netherlands	NLD	0.153	0.361	-2.142***	0.521**	0.606***	-2.145***
110	New Zealand	NZL	-0.087	-0.174	-4.450	0.034	-0.103	-4.309
111	Nicaragua	NIC	0.273	1.085	-0.582	0.277	1.030	-0.351
112	Niger	NER	0.768***	-0.004	#N/A	0.747**	0.006	1.737***
113	Nigeria	NGA	1.775**	1.172	#N/A	1.889***	1.175	2.896
114	Norway	NOR	0.452	0.739**	#N/A	0.514	0.858***	-9.765
115	Oman	OMN	0.955***	0.868**	-1.062*	1.040***	0.994***	-1.074***
116	Pakistan	PAK	1.071**	1.071**	#N/A	1.024**	1.024**	0.000
117	Panama	PAN	0.813***	0.350	1.976***	0.791***	0.357	1.791
118	Papua New Guinea	PNG	1.102***	1.668***	4.656***	1.081***	1.545***	3.678**

119	Paraguay	PRY	0.183	0.211	-7.078**	0.315	0.215	-4.411*
120	Peru	PER	1.752***	0.858*	2.690**	1.644***	0.734*	1.945
121	Philippines	PHL	1.228***	0.933**	#N/A	1.308***	1.147**	1.529
122	Poland	POL	-1.362**	-0.009	#N/A	-1.219***	0.102	41.450
123	Portugal	PRT	0.997***	1.036***	1.932*	1.017***	1.046***	1.108
124	Puerto Rico	PRI	1.013***	0.668**	3.585*	0.996***	0.895***	2.009
125	Qatar	QAT	0.845***	0.666	2.439	0.840***	0.645**	1.974***
126	Romania	ROU	0.391	1.582***	0.208	0.366	1.193	0.127
127	Russian Federation	RUS	0.948***	0.538	0.826	0.960**	0.526	1.271
128	Rwanda	RWA	1.148***	0.389	1.380***	1.149***	0.385	1.407***
129	Saudi Arabia	SAU	0.443**	0.691***	#N/A	0.418*	0.791***	-0.173
130	Senegal	SEN	1.002	1.647	#N/A	1.027*	1.683	0.853
131	Seychelles	SYC	0.974***	1.037**	0.341	1.030***	0.910	0.348
132	Sierra Leone	SLE	0.617**	0.344	#N/A	0.964**	0.691	0.523
133	Singapore	SGP	0.389	0.573*	#N/A	0.385	0.627**	2.508
134	Slovak Republic	SVK	0.346	0.662	#N/A	0.325	0.620	-3.156
135	Solomon Islands	SLB	0.935**	1.712**	0.514	0.935*	1.678	0.565
136	Somalia	SOM	0.598	0.486	-0.985***	0.564	0.391	-0.713
137	South Africa	ZAF	0.842***	1.012***	1.448	0.877***	1.006**	2.029
138	Spain	ESP	0.701***	0.726***	2.650**	0.746***	0.706***	1.134
139	Sri Lanka	LKA	-0.669	-1.300	#N/A	-0.645	-1.564	2.291
140	St. Kitts and Nevis	KNA	0.751	0.450	0.310	0.742**	0.470	0.244
141	St. Lucia	LCA	0.141	0.292	#N/A	0.113	0.243	-1.410
142	St. Vincent and the Grenadines	VCT	0.477	0.767	16.970	0.393	0.534	13.820
143	Sudan	SDN	0.944**	0.917	#N/A	0.736*	1.000**	-4.070
144	Suriname	SUR	0.520	-1.894	1.349	0.591	-1.692*	1.734
145	Swaziland	SWZ	0.627	0.655	#N/A	0.625	0.642	0.000
146	Sweden	SWE	-0.069	-0.319*	1.415***	0.248	0.274	0.401*
147	Switzerland	CHE	0.115	0.174	-4.058	0.165	0.367	-1.207
148	Syrian Arab Republic	SYR	0.561***	0.566*	#N/A	0.544**	0.599*	-0.570
149	Taiwan, China	TWN	0.088	0.142	#N/A	0.461**	0.580*	6.240
150	Tajikistan	TJK	0.183	1.641	-1.581	-0.135	0.902	-2.163
151	Tanzania	TZA	2.335**	2.335**	#N/A	2.345**	2.345**	0.000
152	Thailand	THA	0.534**	0.659**	1.627	0.485**	0.561*	1.207
153	Togo	TGO	0.239	-0.742	2.021*	0.128	-0.764	-0.437
154	Tonga	TON	0.146	0.770	#N/A	0.898	1.144	6.627*
155	Trinidad and Tobago	TTO	0.755**	0.596	0.738	0.785**	0.595	0.567
156	Tunisia	TUN	0.463**	0.639**	#N/A	0.463	0.666*	1.856
157	Turkey	TUR	0.380	0.318	#N/A	0.472	0.263	-0.370
158	Uganda	UGA	1.150	3.607***	#N/A	1.195	3.462**	-5.805
159	Ukraine	UKR	0.598***	1.019**	0.178	0.573***	0.497	0.150

160	United Arab Emirates	ARE	0.166	-0.226	-0.851***	0.145	-0.257	0.643*
161	United Kingdom	GBR	-0.184	0.404	-0.732***	-0.134	0.526**	-0.199
162	United States	USA	0.006	0.208	0.476	0.268*	0.574*	0.227
163	Uruguay	URY	0.886***	0.639	1.186	0.886***	0.630	1.082
164	Uzbekistan	UZB	0.517	-4.084	-0.183	0.418	-6.247	0.635
165	Vanuatu	VUT	1.740***	1.843***	5.382***	1.677***	1.630*	5.805**
166	Venezuela, RB	VEN	1.349***	1.157	0.645	1.456***	1.185**	0.359
167	Vietnam	VNM	0.358	0.358	#N/A	-0.057	-0.057	0.000
168	Yemen, Rep.	YEM	0.732***	-0.985	0.584**	0.699***	-1.159	0.586*
169	Zambia	ZMB	1.162**	0.599	1.070	1.118***	0.621	0.715
170	Zimbabwe	ZWE	2.049***	2.431**	0.666	2.042***	2.620**	1.551

Note: $\widehat{\beta}GS$ by country is estimated from equation (1) averaged over the 1960-2016 period using Prais-Winsten and OLS (RSE) alternatively to measure government-spending cyclicality (columns 4 and 7). $\widehat{\beta}GS$ by country is also differentiated at good times (D = 0 or real GDP growth rate is positive) in columns 5 and 8, and bad times (D =1 or real GDP growth rate is negative) in columns 6 and 9 using Prais-Winsten and OLS (RSE) respectively. #NA denotes the countries with insufficient observations.

*, **, ***: $\widehat{\beta}GS$ is significant at 10%, 5%, and 1% respectively.

Table A3. Value Added Tax (VAT) cyclicality $\widehat{\beta}VAT$ by country

No.	Country	ISO	Prais-Winten			OLS (RSE)		
			Average	D = 0	D = 1	Average	D = 0	D = 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Argentina	ARG	-0.005	-0.020	0.006	0.003	-0.056	-0.187
2	Austria	AUT	0.011	-0.091**	#N/A	-0.118	-0.397***	-0.707*
3	Azerbaijan	AZE	-0.099***	-0.021	-0.233	-0.098**	-0.020	-0.233
4	Belgium	BEL	-0.002	-0.059	#N/A	-0.161	-0.370***	-1.675
5	Canada	CAN	0.015	0.039	#N/A	0.167*	0.323**	2.366
6	Chile	CHL	-0.019	-0.066	#N/A	-0.065***	-0.065	-0.120*
7	Colombia	COL	0.191***	-0.022	#N/A	0.354*	0.258	#N/A
8	Denmark	DNK	0.008	0.012	0.000	-0.725**	-1.666***	-1.007
9	Dominican Republic	DOM	0.063	0.073	#N/A	-0.046	-0.084	#N/A
10	Ecuador	ECU	0.049	0.027	#N/A	0.123**	0.142	0.025
11	El Salvador	SLV	-0.110	-0.413***	#N/A	-0.305**	-0.430***	#N/A
12	Fiji	FJI	0.039	0.066	#N/A	0.062	-0.019	2.133**
13	France	FRA	-0.063	-0.162	#N/A	0.159	0.235	-0.214
14	Georgia	GEO	0.072***	-0.023	#N/A	0.092***	-0.009	0.049
15	Germany	DEU	-0.021	-0.038	#N/A	-0.392**	-0.658**	-1.036**
16	Greece	GRC	-0.129**	-0.186*	-0.083	-0.396***	-0.300	-0.229
17	Hungary	HUN	0.086	0.064	0.000	0.094	0.350	0.159
18	Italy	ITA	-0.034	-0.257**	0.000	-0.633***	-1.187***	-0.227
19	Jamaica	JAM	0.105	0.085	0.136***	-0.396***	-0.538**	-0.121
20	Japan	JPN	-0.052	-0.294**	#N/A	-0.217**	-0.448**	0.000
21	Luxembourg	LUX	-0.030	-0.063	#N/A	0.020	-0.007	0.308
22	Mexico	MEX	-0.098	-0.003	-0.532	-0.159	-0.495***	-0.548
23	New Zealand	NZL	0.076	0.000	#N/A	0.122	-0.017	-1.485
24	Norway	NOR	-0.042	-0.050	#N/A	-0.567***	-0.667***	-3.449
25	Peru	PER	-0.140***	-0.057	0.346**	0.072	-0.229	0.264
26	Philippines	PHL	0.006	0.010	#N/A	0.173**	0.184*	0.000
27	Portugal	PRT	0.016	0.082	0.000	-0.541***	-0.712***	-0.463
28	Russian Federation	RUS	-0.202***	0.000	-0.486***	-0.206**	0.052	-0.505**
29	South Africa	ZAF	0.219***	#N/A	#N/A	0.219	0.000	6.556
30	Spain	ESP	-0.041	#N/A	-0.991	-0.524**	-0.635*	-0.288
31	Sweden	SWE	-0.098	-0.341**	0.000	-0.273	-0.258	-0.056
32	Thailand	THA	-0.103***	#N/A	-0.382	-0.105	0.000	-0.446
33	Turkey	TUR	0.005	0.001	#N/A	0.018	0.269	-1.127***
34	United Kingdom	GBR	-0.097	-0.014	0.610***	0.003	-1.157***	0.628
35	Uruguay	URY	0.028	0.052	0.165***	0.097	0.201	-0.030

Note: $\widehat{\beta}VAT$ by country is estimated from equation (3) averaged over the 1960-2016 period using Prais-Winsten and OLS (RSE) alternatively with VAT as dependent variable to measure VAT cyclicality (columns 4 and 7). $\widehat{\beta}VAT$ by country is also differentiated at good times (D = 0 or real GDP growth rate is positive) in columns 5 and 8, and bad times (D =1 or real GDP growth rate is negative) in columns 6 and 9 using Prais-Winsten and OLS (RSE) respectively (equations (4a) and (4b)). #NA denotes the countries with insufficient observations. *, **, ***: $\widehat{\beta}VAT$ is significant at 10%, 5%, and 1% respectively.

Table A4. Personal Income Tax (PIT) cyclicality $\hat{\beta}PIT$ by country

No.	Country	ISO	Prais-Winten			OLS (RSE)		
			Average	D = 0	D = 1	Average	D = 0	D = 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Argentina	ARG	0.013	0.030	-0.359	-0.150	-0.642*	-0.550
2	Australia	AUS	#N/A	-0.305	#N/A	-0.123	0.702	-6.914
3	Austria	AUT	-0.023	-0.081	#N/A	0.409	1.238*	3.294***
4	Azerbaijan	AZE	-0.106	-0.110	0.000	-0.387***	0.004	-1.129*
5	Barbados	BRB	#N/A	0.280	0.000	-0.756	1.752*	-2.185
6	Belgium	BEL	0.132	0.318	#N/A	0.671	1.749	9.731
7	Bolivia	BOL	-0.835***	0.105	0.000	-2.550***	-2.271	-1.225
8	Botswana	BWA	#N/A	#N/A	#N/A	2.419***	3.003***	0.000
9	Brazil	BRA	0.024	0.765	-1.248	1.121	2.824**	-0.660
10	Canada	CAN	0.283*	0.031	#N/A	0.199	0.586**	-1.947
11	Chile	CHL	#N/A	#N/A	#N/A	-0.368	0.195	-2.051
12	Colombia	COL	-0.029	-0.045	#N/A	-0.261	-0.631	#N/A
13	Costa Rica	CRI	-0.096	-0.195	-6.127	-1.273*	-0.745	-3.789
14	Czech Republic	CZE	-0.042	0.250	#N/A	-0.655	0.398	-1.234
15	Denmark	DNK	0.620	0.553	#N/A	-0.180	0.004	0.848
16	Dominican Republic	DOM	0.223	0.326	#N/A	-1.793*	-1.269	-7.877
17	Ecuador	ECU	0.128	0.211	#N/A	0.931**	1.328**	3.282***
18	El Salvador	SLV	-0.398*	-1.237***	-2.136	-1.534***	-1.727	-1.913
19	Fiji	FJI	0.010	#N/A	#N/A	-0.194	1.712***	-3.131***
20	Finland	FIN	0.080	-0.044	0.130	0.747**	-0.611	-0.151
21	France	FRA	-0.156	-0.403	#N/A	3.485***	4.047***	8.059
22	Gabon	GAB	-0.286*	-1.137***	#N/A	-0.201	0.605	-0.508
23	Georgia	GEO	-0.369***	-0.547***	-0.411***	-0.367***	-0.578**	-0.414*
24	Germany	DEU	-0.050	-0.027	#N/A	0.520*	0.859*	1.669**
25	Ghana	GHA	-0.091	-0.091	#N/A	-0.971***	-0.971***	#N/A
26	Greece	GRC	-0.308	0.013	-0.356	0.042	-1.079	0.449
27	Honduras	HND	-0.043	0.175	#N/A	-0.576	-0.988	11.310***
28	Hungary	HUN	-0.430*	-1.068	-0.675	-0.638	0.927	-1.367
29	India	IND	#N/A	#N/A	#N/A	-2.742***	-3.494***	#N/A
30	Iran, Islamic Rep.	IRN	#N/A	#N/A	-4.263**	-0.117	1.125	-4.495**
31	Italy	ITA	#N/A	0.252	0.000	2.339***	4.256***	1.290
32	Jamaica	JAM	#N/A	-0.300**	-0.072	-1.540**	0.508	-3.865
33	Japan	JPN	0.030	0.563	-2.365	2.563***	3.741***	-0.428
34	Kenya	KEN	#N/A	-0.054	#N/A	-0.553	-0.583	#N/A
35	Korea, Rep.	KOR	#N/A	#N/A	#N/A	1.793***	2.400***	#N/A

36	Luxembourg	LUX	#N/A	-0.186	#N/A	0.035	-0.013	-0.845	
37	Malta	MLT	0.235	0.330	#N/A	-0.372	-0.125	15.970	
38	Mauritius	MUS	-0.029	-0.029	#N/A	1.483**	1.483**	#N/A	
39	Mexico	MEX	-0.029	-0.572	#N/A	0.110	1.530**	2.016	
40	Namibia	NAM	0.009	-0.011	#N/A	0.006	0.134	#N/A	
41	New Zealand	NZL	-0.134	-0.180	#N/A	-0.702	-1.617	8.352	
42	Nigeria	NGA	#N/A	#N/A	-0.251	-0.919**	0.305	-1.358	
43	Norway	NOR	#N/A	0.562	#N/A	0.642	0.304	-11.730	
44	Pakistan	PAK	#N/A	#N/A	#N/A	3.223***	3.223***	#N/A	
45	Papua New Guinea	PNG	-0.109	-0.158	1.517	-0.401*	-0.770***	1.356	
46	Paraguay	PRY	0.005	0.052	#N/A	0.302	0.665***	-1.449	
47	Peru	PER	-0.102	-0.241	0.000	-0.936***	-0.881	-0.354	
48	Philippines	PHL	0.023	0.031	-0.071	0.089	-0.148	-0.071	
49	Portugal	PRT	#N/A	#N/A	0.334	0.931	1.948	0.400	
50	Russian Federation	RUS	-0.475	-1.075	0.357	-1.219***	-0.679	0.083	
51	South Africa	ZAF	#N/A	#N/A	#N/A	0.162	0.608	1.447	
52	Spain	ESP	-0.197	-0.069	4.707*	-0.142	-1.407	4.190	
53	Sweden	SWE	0.068	-0.075	#N/A	0.416	-1.957*	-0.057	
54	Switzerland	CHE	0.080	0.104	-14.98*	-0.451	-1.289	-14.630***	
55	Tanzania	TZA	-0.093	-0.093	#N/A	-1.107	-1.107	#N/A	
56	Thailand	THA	0.016	0.061	#N/A	1.241***	1.604***	0.000	
57	Turkey	TUR	0.045	0.003	#N/A	0.039	-0.706	5.079**	
58	United Kingdom	GBR	0.067	0.402	0.000	1.191	5.324**	0.622	
59	United States	USA	0.149	-0.391	0.000	2.720**	6.033***	5.605	
60	Uruguay	URY	0.062	#N/A	#N/A	0.512**	-0.258	0.000	
61	Venezuela, RB	VEN	0.151*	0.122	-0.193	-0.004	-0.193	0.359	
62	Zambia	ZMB	-0.124	-0.045	-0.000*	-1.341	-1.959	0.983	

Note: $\widehat{\beta}PIT$ by country is estimated from equation (3) averaged over the 1960-2016 period using Prais-Winsten and OLS (RSE) alternatively with PIT as dependent variable to measure PIT cyclicality (columns 4 and 7). $\widehat{\beta}PIT$ by country is also differentiated at good times (D = 0 or real GDP growth rate is positive) in columns 5 and 8, and bad times (D =1 or real GDP growth rate is negative) in columns 6 and 9 using Prais-Winsten and OLS (RSE) respectively (equations (4a) and (4b)). #NA denotes the countries with insufficient observations.

*, **, ***: $\widehat{\beta}PIT$ is significant at 10%, 5%, and 1% respectively.

Table A5. Corporate Income Tax (CIT) cyclicality $\hat{\beta}CIT$ by country

No.	Country	ISO	Prais-Winten			OLS (RSE)		
			Average	D = 0	D = 1	Average	D = 0	D = 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Argentina	ARG	0.035	-0.367*	0.722	0.016	-0.441	0.156
2	Australia	AUS	-0.172	-0.281*	#N/A	0.582	1.228**	-3.723
3	Austria	AUT	0.006	0.040	#N/A	1.348	3.105**	8.236***
4	Azerbaijan	AZE	-0.017	-0.011	0.000	-0.215***	-0.006	-0.565*
5	Barbados	BRB	-0.176	-0.598**	-1.212	-0.069	1.013	-1.587
6	Belgium	BEL	-0.030	0.258	#N/A	-0.649	-0.561	3.841
7	Bolivia	BOL	0.000	0.000	#N/A	-0.645***	-0.508**	0.000
8	Botswana	BWA	0.073	0.125	#N/A	0.513***	0.554***	-0.480
9	Brazil	BRA	0.024	0.000	#N/A	0.102	0.156**	-0.394
10	Canada	CAN	-0.026	-0.027	#N/A	0.743	2.469***	-2.096
11	Chile	CHL	-0.381*	-0.525	#N/A	-0.199	1.748**	-3.090**
12	Colombia	COL	-0.022	-0.041	#N/A	-0.275	-0.337	#N/A
13	Costa Rica	CRI	0.097	0.243	-3.501	-1.000**	-0.425	-2.165
14	Denmark	DNK	0.018	0.031	4.780**	0.869**	1.327**	3.250**
15	Dominican Republic	DOM	-0.158	-0.007	#N/A	-0.843**	-0.579	-3.439
16	Ecuador	ECU	-0.065	-0.114*	#N/A	0.055	-0.043	-1.090***
17	El Salvador	SLV	0.009	0.064	-0.356	-0.280***	-0.825***	-0.319
18	Fiji	FJI	0.004	0.020	#N/A	-0.197	0.196	-1.011**
19	Finland	FIN	0.073	0.074	-0.293	1.199***	0.425	-0.304
20	France	FRA	0.024	0.064	#N/A	2.254***	2.814***	2.776
21	Georgia	GEO	-0.207***	0.161**	-0.309***	-0.179**	0.284**	-0.314**
22	Germany	DEU	0.020	0.189	#N/A	1.682**	2.381**	4.531**
23	Ghana	GHA	-0.207**	#N/A	#N/A	-1.725***	-1.692**	-0.659
24	Greece	GRC	0.164	0.027	0.737*	0.395	-0.712**	2.017***
25	Honduras	HND	-0.176	0.079	7.912	-0.498	-0.746	8.313*
26	Hungary	HUN	0.093	-1.309	0.000	-1.275***	-1.449	-0.158
27	India	IND	0.154*	#N/A	#N/A	-1.407***	-1.591***	0.000
28	Iran, Islamic Rep.	IRN	0.004	-0.296	0.260	-0.336	0.507	-0.384
29	Italy	ITA	-0.251**	0.001	0.000	-0.175	-0.627	0.517
30	Jamaica	JAM	-0.097	-0.087	-0.148	-0.131	-0.038	-0.023
31	Japan	JPN	#N/A	-0.007	-0.844	0.524***	0.545***	0.354
32	Kenya	KEN	-0.033	-0.146	#N/A	0.197	-0.108	3.632
33	Korea, Rep.	KOR	0.020	0.077	#N/A	0.384***	0.662***	0.511
34	Luxembourg	LUX	-0.016	-0.052	#N/A	-0.004	0.019	-0.279
35	Malta	MLT	0.144	0.166	#N/A	0.125	0.135	-1.331
36	Mauritius	MUS	0.167	#N/A	#N/A	-0.487	1.868**	#N/A

37	Mexico	MEX	-0.021	#N/A	#N/A	0.002	0.827**	0.885
38	Namibia	NAM	-0.013	#N/A	#N/A	-0.036	0.151	#N/A
39	New Zealand	NZL	0.267	0.018	-4.219	0.012	-0.780	-3.035
40	Nigeria	NGA	0.001	-0.024	-0.062	-0.181**	0.137	-0.222
41	Norway	NOR	0.079	0.087	#N/A	0.125	0.150	-0.138
42	Oman	OMN	0.036	0.093	#N/A	1.184**	1.950***	-5.552
43	Pakistan	PAK	0.359	0.359	#N/A	0.388	0.388	#N/A
44	Papua New Guinea	PNG	-0.056	-0.139	0.000	-0.326**	-0.486***	0.909
45	Paraguay	PRY	-0.006	-0.055	0.000	-0.642	-1.226***	2.898
46	Peru	PER	0.000	0.141	-0.260	-0.337	0.048	-0.269
47	Philippines	PHL	0.039	0.112	-0.071	-0.215***	-0.376	-0.071
48	Portugal	PRT	-0.233*	-0.133	0.000	0.885**	1.848***	3.514*
49	Russian Federation	RUS	0.032	0.049	-0.085	-0.310**	0.591	-0.417
50	Saudi Arabia	SAU	0.032	0.074	0.000	-0.234	0.602	-0.461
51	South Africa	ZAF	-0.289**	-0.222	0.026	-1.210***	-0.610	0.524
52	Spain	ESP	-0.110	-0.179	0.000	-0.052	-0.420**	0.963*
53	Sweden	SWE	0.164	0.393*	#N/A	0.485	-0.549	0.398
54	Switzerland	CHE	-0.006	-0.018	0.507*	-0.053	0.003	0.516*
55	Tanzania	TZA	-0.025	-0.025	#N/A	-2.144***	-2.144***	#N/A
56	Thailand	THA	-0.052	-0.143	#N/A	0.182	0.471**	0.000
57	Turkey	TUR	0.199	0.077	#N/A	0.104	-0.606	0.030
58	United Kingdom	GBR	-0.022	#N/A	0.454	-0.138	3.164***	1.764
59	United States	USA	0.022	0.095	-0.001	1.072**	2.601***	1.113
60	Uruguay	URY	0.018	-0.085	0.274**	-0.055	-0.014	0.225
61	Venezuela, RB	VEN	-0.038	-0.295	0.000	-0.261	-0.549	0.170
62	Zambia	ZMB	-0.047	-0.163	-0.293	-0.509	-0.835*	0.279

Note: $\widehat{\beta}CIT$ by country is estimated from equation (3) averaged over the 1960-2016 period using Prais-Winsten and OLS (RSE) alternatively with CIT as dependent variable to measure CIT cyclicality (columns 4 and 7). $\widehat{\beta}CIT$ by country is also differentiated at good times (D = 0 or real GDP growth rate is positive) in columns 5 and 8, and bad times (D =1 or real GDP growth rate is negative) in columns 6 and 9 using Prais-Winsten and OLS (RSE) respectively (equations (4a) and (4b)). #NA denotes the countries with insufficient observations.

*, **, ***: $\widehat{\beta}CIT$ is significant at 10%, 5%, and 1% respectively.

Table A6.1. Key statistics of the most pro-/counter- cyclical countries by $\hat{\beta}GS$

Variable	OECD		Non-OECD		EAS		ECS		LCN		MEA		NAC		SAS		SSF		Eurozone	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	POL	ISR	GIN[i]	GMB[i]	KHM[i]	MNG	POL	KAZ[i]	DMA[i]	ECU	LBN[i]	ISR	CAN	USA	LKA[i]	BGD[i]	GIN[i]	GMB[i]	LUX	PRT
$\hat{\beta}GS$	-1.36**	1.36***	-2.90**	3.44**	-0.98	1.84	-1.36**	1.47***	-0.13	2.42***	0.16	1.36***	-0.50***	0.01	-0.67	2.08***	-2.90**	3.44**	-0.45**	1.00***
debt	0.52	1.10	0.94	0.90	0.34	0.61	0.52	0.16	0.59	0.42	0.98	1.10	0.70	0.59	0.73	0.37	0.94	0.90	0.10	0.51
debt_vol	0.10	0.49	0.29	0.41	0.04	0.22	0.10	0.08	0.22	0.28	0.57	0.49	0.16	0.21	0.22	0.10	0.29	0.41	0.06	0.33
fiscap	1.42	3.15			4.15	3.42	1.42	0.89		3.81		3.15	2.31	2.64					0.26	2.22
fiscap_vol	0.24	1.08			1.41	1.29	0.24	0.61		2.83		1.08	0.39	0.76					0.15	0.71
lfiscap	1.43	3.10			4.24	3.44	1.43	0.90		3.87		3.10	2.33	2.68					0.27	2.29
lfiscap_vol	0.25	1.04			1.39	1.44	0.25	0.59		2.92		1.04	0.40	0.80					0.16	0.76
polcon	0.47	0.53	0.33	0.21	0.36	0.22	0.47			0.25	0.46	0.53	0.42	0.40	0.34	0.32	0.33	0.21	0.49	0.41
nare	0.18	0.09	0.69	0.32	0.35	0.68	0.18	0.71	0.29	0.79	0.11	0.09	0.38	0.18	0.47	0.15	0.69	0.32	0.04	0.16
manu	0.58	0.53	0.20	0.02	0.48	0.14	0.58	0.15	0.19	0.04	0.24	0.53	0.46	0.51	0.31	0.74	0.20	0.02	0.20	0.50
CRI	70.15	67.04	52.67	63.02		63.91	70.15	70.90		59.83	51.60	67.04	83.77	80.48	57.61	56.42	52.67	63.02	89.32	76.18
ERI	33.14	37.06	28.78	32.17		27.03	33.14	36.11		30.83	28.58	37.06	40.05	38.14	31.76	32.91	28.78	32.17	41.64	36.46
FRI	33.83	37.30	27.73	31.30		34.40	33.83	36.08		31.58	27.27	37.30	42.14	39.74	32.36	32.65	27.73	31.30	44.82	37.35
PRI	72.38	59.64	48.02	61.59		66.45	72.38	69.55		57.61	48.05	59.64	85.09	82.53	50.42	47.74	48.02	61.59	91.89	78.59
govstab	6.93	6.90	7.19	7.71		7.53	6.93	10.19		6.80	6.44	6.90	8.05	8.51	6.75	6.71	7.19	7.71	10.05	7.72
socecon	5.65	6.72	4.06	5.01		4.02	5.65	6.78		4.54	4.63	6.72	8.22	8.50	4.41	3.21	4.06	5.01	9.70	7.04
invest	8.42	8.01	5.41	7.27		6.43	8.42	8.02		5.16	6.19	8.01	9.71	10.02	6.96	5.73	5.41	7.27	10.39	8.42
inconflict	9.99	6.65	7.23	9.67		10.92	9.99	10.05		8.92	6.02	6.65	11.06	10.71	4.82	6.69	7.23	9.67	11.97	10.21
exconflict	10.63	6.94	8.33	9.49		11.28	10.63	11.00		9.19	5.35	6.94	11.36	9.21	9.36	9.14	8.33	9.49	11.53	11.05
corrupt	3.53	3.94	2.77	2.75		2.94	3.53	1.67		2.84	1.77	3.94	5.49	4.47	2.98	1.66	2.77	2.75	5.38	4.29
military	5.13	2.99	1.20	2.25		5.00	5.13	5.00		2.45	2.30	2.99	6.00	4.96	3.16	2.13	1.20	2.25	6.00	5.26
religious	4.25	2.29	3.01	4.39		4.76	4.25	4.61		4.73	2.29	2.29	5.77	5.44	3.16	3.02	3.01	4.39	6.00	5.85
law	4.51	4.31	2.77	3.96		3.48	4.51	3.85		3.26	3.22	4.31	5.88	5.55	2.36	1.93	2.77	3.96	6.00	5.07
ethnic	5.71	1.71	2.43	4.55		4.76	5.71	4.89		3.69	3.73	1.71	3.56	5.05	1.32	2.87	2.43	4.55	5.00	5.70
democracy	4.81	5.58	1.89	3.13		3.52	4.81	1.54		3.87	3.89	5.58	5.97	5.93	4.03	3.35	1.89	3.13	5.90	5.43
bureau	2.64	3.70	1.53	1.81		1.85	2.64	2.00		2.00	1.52	3.70	4.00	4.00	2.00	1.32	1.53	1.81	4.00	2.79

Note:

$\hat{\beta}GS$ *by country is estimated from equation (1) using Prais-Winsten for the full sample and the other variables are averaged using full sample*

(1) The most countercyclical country; (2) The most procyclical country

[i] *Country without observations for the corresponding variables*

*, **, ***: $\hat{\beta}GS$ is significant at 10%, 5%, and 1% respectively

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean;

MEA: Middle East & North Africa; NAC: North America; SAS: South Asia; SSF: Sub-Saharan Africa

BGD Bangladesh	GMB Gambia	LKA Sri Lanka	USA America
CAN Canada	ISR Israel	LUX Luxembourg	
DMA Dominica	KAZ Kazakhstan	MNG Mongolia	
ECU Ecuador	KHM Cambodia	POL Poland	
GIN Guinea	LBN Lebanon	PRT Portugal	

Table A6.2. Key statistics of the most pro-/counter- cyclical countries by $\widehat{\beta}GS$ (macro variables)

Variable	OECD		Non-OECD		EAS		ECS		LCN		MEA		NAC		SAS		SSF		Eurozone	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	POL	ISR	GIN(i)	GMB(i)	KHM(i)	MNG	POL	KAZ(i)	DMA(i)	ECU	LBN(i)	ISR	CAN	USA	LKA(i)	BGD(i)	GIN(i)	GMB(i)	LUX	PRT
$\widehat{\beta}GS$	-1.36**	1.36***	-2.90**	3.44**	-0.98	1.84	-1.36**	1.47***	-0.13	2.42***	0.16	1.36***	-0.50***	0.01	-0.67	2.08***	-2.90**	3.44**	-0.45**	1.00***
trade	79.09	70.43	56.50	69.30	124.75	113.27	79.09	82.15	91.18	55.53	82.70	70.43	67.47	26.85	63.48	37.90	56.50	69.30	321.09	69.67
inf	0.03	0.02	0.17	0.06	0.04	0.09	0.03	0.09	0.02	0.12	0.02	0.02	0.02	0.02	0.08	0.06	0.17	0.06	0.02	0.02
GDP	0.04	0.04	0.04	0.03	0.08	0.07	0.04	0.07	0.02	0.04	0.04	0.04	0.02	0.02	0.05	0.06	0.04	0.03	0.03	0.01
TAL	1.14	1.96	1.27	1.96	1.53	1.14	1.14	1.54	3.09	0.93	3.87	1.96	2.52	2.25	0.82	0.48	1.27	1.96	203.27	4.03
gs	18.35	23.67	7.46	9.49	5.33	13.87	18.35	11.25	0.18	12.02	14.21	23.67	20.28	15.30	11.42	5.20	7.46	9.49	16.50	19.67

Note:

$\widehat{\beta}GS$ by country is estimated from equation (1) using Prais-Winsten for the full sample and the other control variables are averaged over the most recent period (2000 to latest year available)

(1) The most countercyclical country; (2) The most procyclical country

(i) Country without observations for the corresponding variables

*, **, ***: $\widehat{\beta}GS$ is significant at 10%, 5%, and 1% respectively

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean;

MEA: Middle East & North Africa; NAC: North America; SAS: South Asia; SSF: Sub-Saharan Africa

BGD Bangladesh	GMB Gambia	LKA Sri Lanka	USA America
CAN Canada	ISR Israel	LUX Luxembourg	
DMA Dominica	KAZ Kazakhstan	MNG Mongolia	
ECU Ecuador	KHM Cambodia	POL Poland	
GIN Guinea	LBN Lebanon	PRT Portugal	

Table A7.1. Key statistics of the most pro-/counter- cyclical countries by $\widehat{\beta}VAT$

Variable	OECD		Non-OECD		EAS		ECS		LCN		Eurozone	
	(1)	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*
	HUN	**GRC**	**ZAF**	**RUS**	**NZL**	**THA**	**HUN**	**RUS**	**COL**	**PER**	**PRT**	**GRC**
$\widehat{\beta}VAT$	0.09	-0.13**	0.22***	-0.20***	0.08	-0.10***	0.09	-0.20***	0.19***	-0.14***	0.02***	-0.13**
debt	0.80	0.73	0.39	0.37	0.46	0.31	0.80	0.37	0.27	0.36	0.51	0.73
debt_vol	0.20	0.52	0.08	0.31	0.17	0.14	0.20	0.31	0.13	0.12	0.33	0.52
fiscap	1.90	3.15	1.43	0.61	1.22	2.40	1.90	0.61	2.35	2.26	2.22	3.15
fiscap_vol	0.35	1.08	0.27	0.44	0.52	0.87	0.35	0.44	0.61	0.89	0.71	1.08
lfiscap	1.88	3.25	1.46	0.60	1.21	2.41	1.88	0.60	2.39	2.26	2.29	3.25
lfiscap_vol	0.32	1.14	0.27	0.42	0.52	0.83	0.32	0.42	0.61	0.92	0.76	1.14
polcon	0.42	0.37	0.33	0.28	0.37	0.47	0.42	0.28	0.39	0.40	0.41	0.37
nare	0.15	0.28	0.33	0.63	0.57	0.42	0.15	0.63	0.60	0.73	0.16	0.28
manu	0.71	0.20	0.35	0.18	0.16	0.37	0.71	0.18	0.18	0.10	0.50	0.20
CRI	71.77	68.28	67.70	67.14	81.17	69.64	71.77	67.14	63.33	60.59	76.18	68.28
ERI	32.74	33.41	34.29	36.60	37.67	37.85	32.74	36.60	33.33	32.74	36.45	33.41
FRI	34.05	32.20	35.24	38.66	37.71	39.50	34.05	38.66	36.17	33.53	37.35	32.20
PRI	76.53	70.82	64.91	59.74	86.55	61.97	76.53	59.74	56.62	55.97	78.59	70.82
govstab	7.49	7.21	7.66	8.78	7.79	7.49	7.49	8.78	7.41	6.09	7.72	7.21
socecon	6.34	6.03	5.22	4.85	8.29	7.16	6.34	4.85	4.67	4.98	7.04	6.03
invest	8.46	7.50	8.20	7.08	9.73	7.33	8.46	7.08	7.03	6.82	8.42	7.50
inconflict	11.36	9.13	8.00	8.25	11.74	8.38	11.36	8.25	5.62	6.24	10.21	9.13
exconflict	10.75	10.05	9.88	9.23	11.43	9.23	10.75	9.23	9.26	9.53	11.05	10.05
corrupt	3.84	3.55	3.74	1.95	5.61	2.33	3.84	1.95	2.69	2.71	4.29	3.55
military	5.71	4.54	4.54	4.16	6.00	2.61	5.71	4.16	2.49	3.12	5.26	4.54
religious	5.13	5.12	4.94	5.12	6.00	3.96	5.13	5.12	4.72	5.69	5.85	5.12
law	4.64	4.07	2.36	3.52	5.82	3.56	4.64	3.52	1.50	2.48	5.07	4.07
ethnic	4.46	5.53	2.95	2.70	4.31	3.92	4.46	2.70	5.28	2.69	5.70	5.53
democracy	5.33	5.15	4.68	2.88	5.94	3.65	5.33	2.88	3.95	3.68	5.43	5.15
bureau	3.24	2.79	2.78	1.22	4.00	2.53	3.24	1.22	2.39	1.59	2.79	2.79

Note:

$\widehat{\beta}VAT$ by country is estimated from equation (3) using Prais-Winsten for the full sample and the other variables are averaged using full sample

(1) The most countercyclical country; (2) The most procyclical country

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean; Middle East & North Africa and South Asia have no observations for $\widehat{\beta}VAT$, North America only has observations for CAN but not USA; Sub-Saharan Africa only has observations for South Africa.

*, **, ***: $\widehat{\beta}VAT$ is significant at 10%, 5%, and 1% respectively

COL Colombia	*PRT Portugal*	*PER Peru*
GRC Greece	*RUS Russia*	*NZL New Zealand*
HUN Hungary	*THA Thailand*	*ZAF South Africa*

Table A7.2. Key statistics of the most pro-/counter- cyclical countries by $\widehat{\beta}VAT$ (macro variables)

Variable	OECD		Non-OECD		EAS		ECS		LCN		Eurozone	
	(1)	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*
	HUN	**GRC**	**ZAF**	**RUS**	**NZL**	**THA**	**HUN**	**RUS**	**COL**	**PER**	**PRT**	**GRC**
$\widehat{\beta}VAT$	0.09	-0.13**	0.22***	-0.20***	0.08	-0.10***	0.09	-0.20***	0.19***	-0.14***	0.02***	-0.13**
trade	148.55	56.44	58.90	53.20	59.04	128.39	148.55	53.20	36.10	46.67	69.67	56.44
inf	0.05	0.02	0.06	0.12	0.02	0.02	0.05	0.12	0.05	0.03	0.02	0.02
GDP	0.02	0.00	0.03	0.04	0.03	0.04	0.02	0.04	0.04	0.05	0.01	0.00
TAL	3.05	2.23	1.48	1.49	2.20	1.46	3.05	1.49	0.86	1.06	4.03	2.23
gs	21.10	20.36	19.45	17.68	18.26	14.93	21.10	17.68	16.70	11.42	19.67	20.36

Note:

$\widehat{\beta}VAT$ by country is estimated from equation (3) using Prais-Winsten for the full sample and the other control variables are averaged over the most recent period (2000 to latest year available)

(1) The most countercyclical country; (2) The most procyclical country

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean; Middle East & North Africa and South Asia have no observations for $\widehat{\beta}VAT$, North America only has observations for CAN but not USA; Sub-Saharan Africa only has observations for South Africa.

*, **, ***: $\widehat{\beta}VAT$ is significant at 10%, 5%, and 1% respectively

COL	Colombia	PRT	Portugal	PER	Peru
GRC	Greece	RUS	Russia		
HUN	Hungary	THA	Thailand		
NZL	New Zealand	ZAF	South Africa		

Table A8.1. Key statistics of the most pro-/counter- cyclical countries by $\hat{\beta}PIT$

Variable	OECD		Non-OECD		EAS		ECS		LCN		MEA		NAC		SAS		SSF		Eurozone	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	ITA	HUN	PAK	IND	KOR	NZL	ITA	RUS	DOM	JAM	MLT	IRN	CAN	USA	PAK	IND	BWA[i]	NGA	ITA	GRC
$\hat{\beta}PIT$	2.34***	-0.43*	3.22***	-2.74***	1.79***	-0.13	2.34***	-0.48	0.22	-1.54**	0.24	-0.12	0.28*	0.15	3.22***	-2.74***	2.42***	-0.92**	2.34***	-0.31
debt	0.81	0.80	0.57	0.55	0.17	0.46	0.81	0.37	0.31	0.89	0.41	0.23	0.70	0.59	0.57	0.55	0.22	0.53	0.81	0.73
debt_vol	0.34	0.20	0.17	0.18	0.09	0.17	0.34	0.31	0.12	0.49	0.22	0.14	0.16	0.21	0.17	0.18	0.11	0.52	0.34	0.52
fiscap	2.61	1.90	6.29	4.33	0.96	1.22	2.61	0.61	2.74	4.71	2.10	0.99	2.31	2.64	6.29	4.33		12.61	2.61	3.15
fiscap_vol	0.28	0.35	0.73	1.07	0.36	0.52	0.28	0.44	1.54	0.90	0.21	0.66	0.39	0.76	0.73	1.07		11.13	0.28	1.08
lfiscap	2.65	1.88	6.38	4.34	0.98	1.21	2.65	0.60	2.79	4.71	2.11	1.00	2.33	2.68	6.38	4.34		11.14	2.65	3.25
lfiscap_vol	0.27	0.32	0.70	1.04	0.36	0.52	0.27	0.42	1.52	0.85	0.24	0.69	0.40	0.80	0.70	1.04		10.01	0.27	1.14
polcon	0.48	0.42	0.41	0.48	0.39	0.37	0.48	0.28	0.34	0.34	0.34	0.26	0.42	0.40	0.41	0.48	0.22	0.44	0.48	0.37
nare	0.12	0.15	0.25	0.28	0.12	0.57	0.12	0.63	0.34	0.23	0.04	0.84	0.38	0.18	0.25	0.28	0.12	1.25	0.12	0.28
manu	0.68	0.71	0.60	0.46	0.75	0.16	0.68	0.18	0.33	0.28	0.39	0.06	0.46	0.51	0.60	0.46	0.73	0.02	0.68	0.20
CRI	77.04	71.77	55.03	63.33	77.89	81.17	77.04	67.14	63.94	66.08	76.95	60.30	83.77	80.48	55.03	63.33	77.19	55.85	77.04	68.28
ERI	37.55	32.74	32.11	32.82	40.28	37.67	37.55	36.60	34.02	29.50	38.58	31.64	40.05	38.14	32.11	32.82	40.59	31.82	37.55	33.41
FRI	39.86	34.05	32.11	37.30	42.00	37.71	39.86	38.66	32.00	33.73	37.11	35.56	42.14	39.74	32.11	37.30	40.71	34.83	39.86	32.20
PRI	76.23	76.53	45.77	56.50	73.83	86.55	76.23	59.74	62.45	69.21	78.42	54.05	85.09	82.53	45.77	56.50	72.53	45.98	76.23	70.82
govstab	7.09	7.49	7.00	6.87	7.46	7.79	7.09	8.78	7.46	7.35	8.17	7.10	8.05	8.51	7.00	6.87	8.61	6.89	7.09	7.21
socecon	7.46	6.34	5.53	5.21	8.58	8.29	7.46	4.85	4.60	5.65	8.30	5.30	8.22	8.50	5.53	5.21	5.63	3.23	7.46	6.03
invest	8.75	8.46	5.76	7.06	8.61	9.73	8.75	7.08	7.52	7.72	9.22	5.42	9.70	10.02	5.76	7.06	9.48	5.67	8.75	7.50
inconflict	10.21	11.36	6.54	6.56	9.83	11.74	10.21	8.25	9.24	9.12	10.56	7.74	11.06	10.71	6.54	6.56	10.79	6.96	10.21	9.13
exconflict	11.36	10.75	7.87	8.45	8.45	11.43	11.36	9.23	10.11	11.77	11.34	6.66	11.36	9.21	7.87	8.45	9.82	9.82	11.36	10.05
corrupt	3.11	3.84	1.96	2.56	3.08	5.61	3.11	1.95	2.66	2.14	3.53	2.65	5.49	4.47	1.96	2.56	3.51	1.61	3.11	3.55
military	6.00	5.71	0.82	4.08	4.08	6.00	6.00	4.16	2.71	6.00	5.35	4.65	6.00	4.96	0.82	4.08	5.64	1.39	6.00	4.54
religious	5.13	5.13	1.08	2.26	5.63	6.00	5.13	5.12	5.00	5.98	4.23	1.72	5.77	5.44	1.08	2.26	5.00	1.87	5.13	5.12
law	4.71	4.64	2.72	3.47	4.16	5.82	4.71	3.52	2.93	2.21	4.65	3.63	5.88	5.55	2.72	3.47	4.17	2.02	4.71	4.07
ethnic	5.02	4.46	2.32	1.97	5.74	4.31	5.02	2.70	4.34	4.76	4.99	3.73	3.56	5.05	2.32	1.97	4.28	2.35	5.02	5.53
democracy	4.99	5.33	2.30	5.03	4.72	5.94	4.99	2.88	4.43	4.17	5.33	3.20	5.97	5.93	2.30	5.03	3.68	2.89	4.99	5.15
bureau	2.86	3.24	1.98	2.98	3.09	4.00	2.86	1.22	1.41	2.68	2.71	1.85	4.00	4.00	1.98	2.98	2.23	1.18	2.86	2.79

Note:

$\hat{\beta}PIT$ by country is estimated from equation (3) using Prais-Winsten for the full sample and the other variables are averages using full sample

(1) The most countercyclical country; (2) The most procyclical country

[i] Country without observations for the corresponding variables

*, **, ***: $\hat{\beta}PIT$ is significant at 10%, 5%, and 1% respectively

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean;

MEA: Middle East & North Africa; NAC: North America; SAS: South Asia; SSF: Sub-Saharan Africa

BWA Botswana	IND India	MLT Malta	USA America
CAN Canada	IRN Iran	NGA Nigeria	
DOM Dominican Republic	ITA Italy	NZL New Zealand	
GRC Greece	JAM Jamaica	PAK Pakistan	
HUN Hungary	KOR South Korea	RUS Russia	

Table A8.2. Key statistics of the most pro-/counter- cyclical countries by $\widehat{\beta}PIT$ (macro variables)

Variable	OECD		Non-OECD		EAS		ECS		LCN		MEA		NAC		SAS		SSF		Eurozone	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	ITA	HUN	PAK	IND	KOR	NZL	ITA	RUS	DOM	JAM	MLT	IRN	CAN	USA	PAK	IND	BWA[i]	NGA	ITA	GRC
$\widehat{\beta}PIT$	2.34***	-0.43*	3.22***	-2.74***	1.79***	-0.13	2.34***	-0.48	0.22	-1.54**	0.24	-0.12	0.28*	0.15	3.22***	-2.74***	2.42***	-0.92**	2.34***	-0.31
trade	52.32	148.55	31.73	43.17	83.26	59.04	52.32	53.20	64.87	87.97	265.50	46.64	67.47	26.85	31.73	43.17	96.91	54.36	52.32	56.44
inf	0.02	0.05	0.08	0.07	0.03	0.02	0.02	0.12	0.09	0.10	0.02	0.17	0.02	0.02	0.08	0.07	0.07	0.12	0.02	0.02
GDP	0.00	0.02	0.04	0.07	0.04	0.03	0.00	0.04	0.05	0.01	0.03	0.04	0.02	0.02	0.04	0.07	0.04	0.07	0.00	0.00
TAL	2.35	3.05	0.64	0.62	1.14	2.20	2.35	1.49	0.80	1.75	9.31	0.50	2.52	2.25	0.64	0.62	1.46	1.17	2.35	2.23
gs	19.24	21.10	9.71	10.95	13.88	18.26	19.24	17.68	8.97	14.80	18.85	11.23	20.28	15.30	9.71	10.95	20.17	8.03	19.24	20.36

Note:

$\widehat{\beta}PIT$ by country is estimated from equation (3) using Prais-Winsten for the full sample and the other control variables are averaged over the most recent period (2000 to latest year available)

(1) The most countercyclical country; (2) The most procyclical country

[i] *Country without observations for the corresponding variables*

*, **, ***: $\widehat{\beta}PIT$ is significant at 10%, 5%, and 1% respectively

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean;

MEA: Middle East & North Africa; NAC: North America; SAS: South Asia; SSF: Sub-Saharan Africa

BWA Botswana	IND India	MLT Malta	USA America
CAN Canada	IRN Iran	NGA Nigeria	
DOM Dominican Republic	ITA Italy	NZL New Zealand	
GRC Greece	JAM Jamaica	PAK Pakistan	
HUN Hungary	KOR South Korea	RUS Russia	

Table A9.1. Key statistics of the most pro-/counter- cyclical countries by $\hat{\beta}CIT$

Variable	OECD		Non-OECD		EAS		ECS		LCN		MEA		NAC		SAS		SSF		Eurozone	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	JPN	CHL	PAK	ZAF	JPN	AUS	TUR	ITA	CRI	CHL	MLT	IRN	USA	CAN	PAK	IND	MUS[i]	ZAF	GRC	ITA
$\hat{\beta}CIT$	0.52***	-0.38*	0.36	-0.29**	0.52***	-0.17	0.20	-0.25**	0.10	-0.38*	0.14	0.00	0.02	-0.03	0.36	0.15*	0.17	-0.29**	0.16	-0.25**
debt	0.94	0.47	0.57	0.39	0.94	0.25	0.36	0.81	0.43	0.47	0.41	0.23	0.59	0.70	0.57	0.55	0.47	0.39	0.73	0.81
debt_vol	0.80	0.43	0.17	0.08	0.80	0.08	0.12	0.34	0.25	0.43	0.22	0.14	0.21	0.16	0.17	0.18	0.13	0.08	0.52	0.34
fiscap	4.82	2.14	6.29	1.43	4.82	0.76	2.21	2.61	1.86	2.14	2.10	0.99	2.64	2.31	6.29	4.33	2.72	1.43	3.15	2.61
fiscap_vol	2.36	2.30	0.73	0.27	2.36	0.26	0.67	0.28	0.47	2.30	0.21	0.66	0.76	0.39	0.73	1.07	0.31	0.27	1.08	0.28
lfiscap	5.03	2.06	6.38	1.46	5.03	0.79	2.21	2.65	1.86	2.06	2.11	1.00	2.68	2.33	6.38	4.34	2.73	1.46	3.25	2.65
lfiscap_vol	2.46	2.18	0.70	0.27	2.46	0.29	0.66	0.27	0.43	2.18	0.24	0.69	0.80	0.40	0.70	1.04	0.32	0.27	1.14	0.27
polcon	0.51	0.35	0.41	0.33	0.51	0.49	0.41	0.48	0.39	0.35	0.34	0.26	0.40	0.42	0.41	0.48	0.35	0.33	0.37	0.48
nare	0.04	0.72	0.25	0.33	0.04	0.65	0.36	0.12	0.47	0.72	0.04	0.84	0.18	0.38	0.25	0.28	0.21	0.33	0.28	0.12
manu	0.82	0.09	0.60	0.35	0.82	0.18	0.35	0.68	0.29	0.09	0.39	0.06	0.51	0.46	0.60	0.46	0.36	0.35	0.20	0.68
CRI	84.92	72.38	55.03	67.70	84.92	80.35	58.73	77.04	70.19	72.38	76.95	60.30	80.48	83.77	55.03	63.33		67.70	68.28	77.04
ERI	40.29	36.50	32.11	34.29	40.29	38.92	29.64	37.55	33.17	36.50	38.58	31.64	38.14	40.05	32.11	32.82		34.29	33.41	37.55
FRI	46.42	37.89	32.11	35.24	46.42	37.30	30.26	39.86	35.41	37.89	37.11	35.56	39.74	42.14	32.11	37.30		35.24	32.20	39.86
PRI	83.05	70.77	45.77	64.91	83.05	84.17	56.74	76.23	71.71	70.77	78.42	54.05	82.53	85.09	45.77	56.50		64.91	70.82	76.23
govstab	7.78	7.29	7.00	7.66	7.78	8.17	7.58	7.09	6.96	7.29	8.17	7.10	8.51	8.05	7.00	6.87		7.66	7.21	7.09
socecon	8.28	6.84	5.53	5.22	8.28	8.18	5.15	7.46	6.30	6.84	8.30	5.30	8.50	8.22	5.53	5.21		5.22	6.03	7.46
invest	9.54	8.97	5.76	8.20	9.54	8.94	6.73	8.75	7.50	8.97	9.22	5.42	10.02	9.70	5.76	7.06		8.20	7.50	8.75
inconflict	11.03	8.54	6.54	8.00	11.03	10.91	7.30	10.21	9.97	8.54	10.56	7.74	10.71	11.06	6.54	6.56		8.00	9.13	10.21
exconflict	10.65	10.16	7.87	9.88	10.65	10.61	8.47	11.36	9.35	10.16	11.34	6.66	9.21	11.36	7.87	8.45		9.88	10.05	11.36
corrupt	4.17	3.74	1.96	3.74	4.17	4.82	2.64	3.11	3.77	3.74	3.53	2.65	4.47	5.49	1.96	2.56		3.74	3.55	3.11
military	5.61	3.31	0.82	4.54	5.61	6.00	2.88	6.00	6.00	3.31	5.35	4.65	4.96	6.00	0.82	4.08		4.54	4.54	6.00
religious	5.59	5.40	1.08	4.94	5.59	6.00	3.78	5.13	5.00	5.40	4.23	1.72	5.44	5.77	1.08	2.26		4.94	5.12	5.13
law	5.23	4.59	2.72	2.36	5.23	5.83	3.67	4.71	3.78	4.59	4.65	3.63	5.55	5.88	2.72	3.47		2.36	4.07	4.71
ethnic	5.78	5.17	2.32	2.95	5.78	4.41	2.20	5.02	6.00	5.17	4.99	3.73	5.05	3.56	2.32	1.97		2.95	5.53	5.02
democracy	5.40	4.13	2.30	4.68	5.40	6.00	4.37	4.99	5.23	4.13	5.33	3.20	5.93	5.97	2.30	5.03		4.68	5.15	4.99
bureau	3.99	2.64	1.98	2.78	3.99	4.00	2.17	2.86	2.01	2.64	2.71	1.85	4.00	4.00	1.98	2.98		2.78	2.79	2.86

Note:

$\hat{\beta}CIT$ by country is estimated from equation (3) using Prais-Winsten for the full sample and the other variables are averaged using full sample

(1): The most countercyclical country; (2): The most procyclical country

[i] *Country without observations for the corresponding variables*

*, **, ***: $\hat{\beta}CIT$ is significant at 10%, 5%, and 1% respectively

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean;

MEA: Middle East & North Africa; NAC: North America; SAS: South Asia; SSF: Sub-Saharan Africa

AUS Australia	IND India	MUS Mauritius
CAN Canada	IRN Iran	PAK Pakistan
CHL Chile	ITA Italy	TUR Turkey
CRI Costa Rica	JPN Japan	USA America
GRC Greece	MLT Malta	ZAF South Africa

Table A9.2. Key statistics of the most pro-/counter- cyclical countries by $\hat{\beta}CIT$ (macro variables)

Variable	OECD		Non-OECD		EAS		ECS		LCN		MEA		NAC		SAS		SSF		Eurozone	
	(1)	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*
	JPN	**CHL**	**PAK**	**ZAF**	**JPN**	**AUS**	**TUR**	**ITA**	**CRI**	**CHL**	**MLT**	**IRN**	**USA**	**CAN**	**PAK**	**IND**	**MUS[i]**	**ZAF**	**GRC**	**ITA**
$\hat{\beta}CIT$	0.52***	-0.38*	0.36	-0.29**	0.52***	-0.17	0.20	-0.25**	0.10	-0.38*	0.14	0.00	0.02	-0.03	0.36	0.15*	0.17	-0.29**	0.16	-0.25**
trade	28.40	67.37	31.73	58.90	28.40	41.06	48.12	52.32	76.82	67.37	265.50	46.64	26.85	67.47	31.73	43.17	115.93	58.90	56.44	52.32
inf	0.00	0.03	0.08	0.06	0.00	0.03	0.17	0.02	0.08	0.03	0.02	0.17	0.02	0.02	0.08	0.07	0.05	0.06	0.02	0.02
GDP	0.01	0.04	0.04	0.03	0.01	0.03	0.05	0.00	0.04	0.04	0.03	0.04	0.02	0.02	0.04	0.07	0.04	0.03	0.00	0.00
TAL	1.56	1.93	0.64	1.48	1.56	2.23	0.89	2.35	0.94	1.93	9.31	0.50	2.25	2.52	0.64	0.62	24.40	1.48	2.23	2.35
gs	18.86	11.83	9.71	19.45	18.86	17.74	13.58	19.24	15.38	11.83	18.85	11.23	15.30	20.28	9.71	10.95	14.02	19.45	20.36	19.24

Note:

$\hat{\beta}CIT$ by country is estimated from equation (3) using Prais-Winsten for the full sample and the other control variables are averaged over the most recent period (2000 to latest year available)

(1): The most countercyclical country; (2): The most procyclical country

[i] Country without observations for the corresponding variables

*, **, ***: $\hat{\beta}CIT$ is significant at 10%, 5%, and 1% respectively

EAS: East Asia & Pacific; ECS: Europe and Central Asia; LCN: Latin America & Caribbean;

MEA: Middle East & North Africa; NAC: North America; SAS: South Asia; SSF: Sub-Saharan Africa

AUS Australia	IND India	MUS Mauritius
CAN Canada	IRN Iran	PAK Pakistan
CHL Chile	ITA Italy	TUR Turkey
CRI Costa Rica	JPN Japan	USA America
GRC Greece	MLT Malta	ZAF South Africa

Table A10.1 Determinants of fiscal behaviour at good times, sample period 1960-2016

Dependent variable: Government spending cyclicality $\hat{\beta}GS$ (Prais-Winsten estimates)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
polcon	-1.052	-1.453*	-1.453*	-1.451*	-1.451*	-1.043	-1.072*	-0.935	-0.556	-1.067*	-0.945	-1.085*	-1.165*
	(0.636)	(0.831)	(0.831)	(0.831)	(0.831)	(0.637)	(0.640)	(0.619)	(0.598)	(0.633)	(0.608)	(0.624)	(0.654)
inf	-0.006	0.094	0.094	0.094	0.094	-0.006	-0.021	-0.063	-0.044	-0.077	-0.074	-0.055	-0.057
	(0.065)	(0.133)	(0.133)	(0.133)	(0.133)	(0.065)	(0.068)	(0.075)	(0.067)	(0.080)	(0.067)	(0.073)	(0.085)
trade	-0.323**	-0.209	-0.209	-0.209	-0.208	-0.326**	-0.341**	-0.290*	-0.281*	-0.172	-0.148	-0.192	-0.192
	(0.150)	(0.138)	(0.138)	(0.138)	(0.138)	(0.153)	(0.155)	(0.147)	(0.156)	(0.146)	(0.149)	(0.146)	(0.143)
TAL	-0.002	-0.003	-0.003	-0.003	-0.003	-0.002	-0.001	-0.001	-0.003*	-0.000	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
gs	1.254	0.944	0.938	0.947	0.941	1.244	1.321	1.484	1.184	2.189	2.045	1.663	1.928
	(1.395)	(1.814)	(1.815)	(1.814)	(1.815)	(1.408)	(1.392)	(1.446)	(1.335)	(1.986)	(1.937)	(1.885)	(2.015)
fiscap		0.001***											
		(0.000)											
fiscap_vol			0.001***										
			(0.000)										
lfiscap				0.002***									
				(0.000)									
lfiscap_vol					0.001***								
					(0.000)								
debt						0.038							
						(0.146)							
debt_vol							0.291**						
							(0.115)						
nare								0.373*					
								(0.223)					
manu									-0.733***				
									(0.253)				
CRI										-0.019***			
										(0.007)			
ERI											-0.047***		
											(0.015)		
FRI												-0.034***	
												(0.012)	
PRI													-0.012**
													(0.006)
Constant	1.080***	1.171***	1.174***	1.169***	1.172***	1.059***	1.008***	0.829**	1.093***	2.065***	2.392***	2.131***	1.704***
	(0.347)	(0.405)	(0.406)	(0.405)	(0.406)	(0.345)	(0.346)	(0.342)	(0.336)	(0.517)	(0.555)	(0.536)	(0.464)
Number of countries	143	93	93	93	93	143	143	141	141	116	116	116	116
R-squared	0.043	0.072	0.071	0.071	0.071	0.044	0.055	0.058	0.089	0.101	0.121	0.095	0.083
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A10.1 Determinants of fiscal behaviour at good times, sample period 1960-2016 (continued)

Dependent variable: Government spending cyclicality $\hat{\beta}GS$ (Prais-Winsten estimates)

VARIABLES	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
polcon	-1.435**	-1.072	-1.003	-1.307*	-1.209*	-1.157*	-1.288*	-1.349*	-1.282*	-1.384**	-1.147	-1.133
	(0.716)	(0.653)	(0.638)	(0.668)	(0.669)	(0.677)	(0.680)	(0.685)	(0.669)	(0.670)	(0.713)	(0.692)
inf	0.006	-0.073	-0.051	-0.041	-0.011	-0.043	-0.020	0.013	-0.053	-0.006	-0.007	-0.025
	(0.076)	(0.081)	(0.084)	(0.090)	(0.075)	(0.078)	(0.086)	(0.079)	(0.089)	(0.081)	(0.078)	(0.077)
trade	-0.226	-0.189	-0.172	-0.178	-0.197	-0.250	-0.220	-0.241*	-0.232	-0.230	-0.249*	-0.234
	(0.144)	(0.149)	(0.146)	(0.138)	(0.131)	(0.154)	(0.139)	(0.141)	(0.148)	(0.140)	(0.140)	(0.149)
TAL	-0.001	-0.000	-0.001	-0.002	-0.002	-0.000	-0.002	-0.002	-0.001	-0.002	-0.002	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
gs	1.084	1.817	1.620	1.448	0.963	1.818	1.358	1.035	1.960	0.932	1.101	1.495
	(2.103)	(1.919)	(2.112)	(1.893)	(1.795)	(2.119)	(2.175)	(1.808)	(2.323)	(1.824)	(1.929)	(2.089)
govstab	-0.074											
	(0.104)											
socecon		-0.098***										
		(0.032)										
invest			-0.105*									
			(0.062)									
inconflict				-0.070								
				(0.053)								
exconflict					-0.085							
					(0.061)							
corrupt						-0.118*						
						(0.063)						
military							-0.045					
							(0.052)					
religious								-0.062				
								(0.056)				
law									-0.095			
									(0.068)			
ethnic										-0.078		
										(0.058)		
democracy											-0.048	
											(0.066)	
bureau												-0.094
												(0.071)
Constant	1.723**	1.444***	1.674***	1.656***	1.903***	1.314***	1.229***	1.426***	1.327***	1.471***	1.257***	1.195***
	(0.810)	(0.389)	(0.455)	(0.567)	(0.716)	(0.372)	(0.385)	(0.468)	(0.366)	(0.472)	(0.406)	(0.381)
Number of countries	116	116	116	116	116	116	116	116	116	116	116	116
R-squared	0.057	0.101	0.082	0.071	0.070	0.077	0.060	0.062	0.070	0.067	0.057	0.066
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: OLS specification with robust standard error. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. $\hat{\beta}GS$ by country is estimated in equation (4a).

Table A10.2 Determinants of fiscal behaviour at good times, sample period 1960-2016

Dependent variable: Government spending cyclicality $\hat{\beta}GS$ (OLS estimates)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
polcon	-0.814	-1.000	-1.000	-0.999	-0.997	-0.811	-0.831	-0.728	-0.483	-0.971	-0.864	-0.976	-1.040
	(0.607)	(0.791)	(0.791)	(0.791)	(0.791)	(0.607)	(0.613)	(0.596)	(0.578)	(0.654)	(0.636)	(0.650)	(0.670)
inf	-0.038	-0.007	-0.007	-0.007	-0.006	-0.039	-0.052	-0.074	-0.063	-0.091	-0.098	-0.080	-0.074
	(0.055)	(0.108)	(0.108)	(0.108)	(0.108)	(0.055)	(0.057)	(0.063)	(0.055)	(0.073)	(0.065)	(0.068)	(0.075)
trade	-0.376**	-0.270*	-0.269*	-0.270*	-0.269*	-0.377**	-0.391**	-0.358**	-0.352**	-0.267*	-0.244	-0.278*	-0.283*
	(0.162)	(0.143)	(0.143)	(0.143)	(0.143)	(0.164)	(0.168)	(0.160)	(0.167)	(0.160)	(0.165)	(0.161)	(0.156)
TAL	-0.001	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.002	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
gs	2.176	1.704	1.701	1.706	1.703	2.172	2.232	2.296	2.112	3.000	3.040	2.713	2.757
	(1.351)	(1.570)	(1.570)	(1.570)	(1.570)	(1.370)	(1.355)	(1.401)	(1.353)	(2.056)	(2.038)	(1.958)	(2.063)
fiscap		0.001*											
		(0.000)											
fiscap_vol			0.001*										
			(0.000)										
lfiscap				0.001*									
				(0.000)									
lfiscap_vol					0.001*								
					(0.000)								
debt						0.015							
						(0.142)							
debt_vol							0.243**						
							(0.103)						
nare								0.225					
								(0.206)					
manu									-0.468**				
									(0.227)				
CRI										-0.011			
										(0.007)			
ERI											-0.032**		
											(0.014)		
FRI												-0.021*	
												(0.012)	
PRI													-0.006
													(0.006)
Constant	0.926***	1.002**	1.003**	1.001**	1.002**	0.917***	0.865**	0.775**	0.935***	1.511***	1.815***	1.570***	1.261**
	(0.347)	(0.389)	(0.390)	(0.389)	(0.390)	(0.333)	(0.346)	(0.332)	(0.342)	(0.554)	(0.584)	(0.590)	(0.497)
Number of countries	143	93	93	93	93	143	143	141	141	116	116	116	116
R-squared	0.054	0.072	0.072	0.072	0.072	0.054	0.062	0.060	0.074	0.067	0.082	0.066	0.058
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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Table A10.2 Determinants of fiscal behaviour at good times, sample period 1960-2016 (continued)

Dependent variable: Government spending cyclicality $\hat{\beta}GS$ (OLS estimates)

VARIABLES	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
polcon	-1.168	-0.959	-0.964	-1.113	-1.043	-1.026	-1.105	-1.134	-1.102	-1.149*	-1.131	-1.055
	(0.733)	(0.669)	(0.658)	(0.682)	(0.676)	(0.686)	(0.688)	(0.693)	(0.684)	(0.685)	(0.728)	(0.706)
inf	-0.041	-0.093	-0.069	-0.065	-0.055	-0.070	-0.053	-0.038	-0.069	-0.047	-0.036	-0.051
	(0.070)	(0.073)	(0.079)	(0.079)	(0.065)	(0.074)	(0.076)	(0.068)	(0.084)	(0.069)	(0.071)	(0.073)
trade	-0.303*	-0.274*	-0.275*	-0.277*	-0.277*	-0.313*	-0.299*	-0.308*	-0.305*	-0.304*	-0.313**	-0.307*
	(0.157)	(0.164)	(0.158)	(0.153)	(0.147)	(0.168)	(0.153)	(0.156)	(0.161)	(0.156)	(0.155)	(0.159)
TAL	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
gs	2.289	2.843	2.579	2.503	2.305	2.763	2.427	2.298	2.722	2.233	2.111	2.408
	(2.156)	(2.030)	(2.158)	(1.957)	(1.905)	(2.276)	(2.140)	(1.850)	(2.391)	(1.899)	(1.938)	(2.196)
govstab	-0.031											
	(0.101)											
socecon		-0.063**										
		(0.031)										
invest			-0.052									
			(0.062)									
inconflict				-0.035								
				(0.052)								
exconflict					-0.058							
					(0.057)							
corrupt						-0.067						
						(0.061)						
military							-0.020					
							(0.050)					
religious								-0.032				
								(0.056)				
law									-0.045			
									(0.064)			
ethnic										-0.035		
										(0.060)		
democracy											0.002	
											(0.067)	
bureau												-0.033
												(0.067)
Constant	1.220	1.161***	1.235**	1.231**	1.480**	1.068***	1.015**	1.117**	1.062***	1.125**	0.993**	0.999**
	(0.832)	(0.404)	(0.502)	(0.593)	(0.723)	(0.380)	(0.401)	(0.511)	(0.382)	(0.515)	(0.427)	(0.390)
Number of countries	116	116	116	116	116	116	116	116	116	116	116	116
R-squared	0.051	0.070	0.057	0.055	0.059	0.058	0.052	0.053	0.054	0.053	0.050	0.052
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: OLS specification with robust standard error. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$. $\hat{\beta}GS$ by country is estimated in equation (4a).

Table A10.3 Determinants of fiscal behaviour at bad times, sample period 1960-2016

Dependent variable: Government spending cyclicality $\hat{\beta}GS$ (OLS estimates)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
polcon	-4.001	-6.795*	-8.661*	-6.529*	-10.856*	-4.149	-3.847	-2.957	-3.388	-2.559	-2.115	-2.588	-2.603
	(2.881)	(3.741)	(4.733)	(3.689)	(5.428)	(2.911)	(3.019)	(2.647)	(2.528)	(3.101)	(2.885)	(3.146)	(3.125)
inf	0.044	0.062	0.200**	0.064	0.329*	0.061	0.084	0.062	0.048	0.014	-0.018	0.012	0.029
	(0.047)	(0.068)	(0.091)	(0.066)	(0.171)	(0.045)	(0.060)	(0.050)	(0.047)	(0.066)	(0.092)	(0.077)	(0.058)
trade	0.018	-0.666	0.322	-0.715	-0.850	0.063	-0.108	-0.426	-0.295	0.180	0.226	0.151	0.150
	(0.922)	(1.151)	(0.534)	(1.160)	(1.396)	(0.926)	(0.972)	(1.058)	(0.973)	(0.956)	(0.960)	(0.923)	(0.952)
TAL	-0.013**	-0.009	-0.012**	-0.009	-0.005	-0.014**	-0.013**	-0.013**	-0.010	-0.013	-0.011	-0.013	-0.013
	(0.006)	(0.007)	(0.005)	(0.007)	(0.010)	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.009)	(0.008)	(0.008)
gs	5.088	1.485	3.173	1.390	12.155	5.833	7.492	2.876	4.425	3.769	4.688	3.726	3.465
	(4.776)	(8.068)	(7.663)	(7.990)	(11.894)	(4.991)	(5.664)	(5.083)	(5.058)	(7.604)	(8.470)	(8.247)	(7.505)
fiscap		-0.026											
		(0.018)											
fiscap_vol			**-0.089****										
			(0.044)										
lfiscap				-0.030									
				(0.021)									
lfiscap_vol					**-0.240***								
					(0.132)								
debt						-0.394							
						(0.424)							
debt_vol							-0.698						
							(0.578)						
nare								-1.485					
								(1.295)					
manu									1.514				
									(1.396)				
CRI										-0.026			
										(0.031)			
ERI											-0.091		
											(0.098)		
FRI												-0.051	
												(0.072)	
PRI													-0.018
													(0.026)
Constant	1.404	3.954**	2.878	3.871**	3.747	1.565	1.234	2.260	0.994	2.577	3.342	2.629	2.161
	(1.414)	(1.903)	(1.813)	(1.887)	(2.259)	(1.453)	(1.478)	(1.621)	(1.337)	(2.553)	(3.194)	(2.857)	(2.265)
Number of countries	111	71	57	72	62	111	104	104	106	91	91	91	91
R-squared	0.016	0.031	0.155	0.030	0.053	0.018	0.021	0.017	0.017	0.014	0.017	0.015	0.013
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table A10.3 Determinants of fiscal behaviour at bad times, sample period 1960-2016 (continued)

Dependent variable: Government spending cyclicality $\hat{\beta}GS$ (OLS estimates)

VARIABLES	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
polcon	-4.290	-2.659	-2.153	-2.900	-2.908	-2.822	-2.762	-2.333	-2.616	-2.836	-1.752	-2.743
	(3.503)	(3.106)	(3.079)	(3.236)	(3.383)	(3.163)	(3.135)	(3.392)	(3.194)	(3.233)	(2.957)	(3.116)
inf	-0.006	0.025	-0.058	0.075	0.061	0.064	0.052	0.060	0.042	0.055	0.000	0.047
	(0.073)	(0.060)	(0.084)	(0.056)	(0.049)	(0.054)	(0.053)	(0.062)	(0.049)	(0.047)	(0.074)	(0.052)
trade	0.536	0.210	0.616	-0.074	0.018	0.077	0.049	-0.001	0.093	0.017	-0.109	0.063
	(0.733)	(0.990)	(0.816)	(1.081)	(1.055)	(0.968)	(0.978)	(1.069)	(1.050)	(1.068)	(1.139)	(0.998)
TAL	-0.012	-0.012	-0.008	-0.015**	-0.014**	-0.017***	-0.015**	-0.007	-0.014**	-0.015**	-0.009	-0.014*
	(0.008)	(0.008)	(0.009)	(0.007)	(0.007)	(0.005)	(0.007)	(0.013)	(0.006)	(0.006)	(0.011)	(0.007)
gs	3.542	3.110	5.183	1.783	2.570	0.494	2.227	7.551	2.903	2.183	5.290	2.596
	(7.887)	(7.377)	(8.355)	(6.610)	(7.590)	(5.196)	(7.525)	(10.897)	(6.425)	(6.910)	(9.335)	(7.424)
govstab	-0.559											
	(0.481)											
socecon		-0.167										
		(0.205)										
invest			**-0.556***									
			(0.320)									
inconflict				0.120								
				(0.178)								
exconflict					0.084							
					(0.257)							
corrupt						0.220						
						(0.408)						
military							0.014					
							(0.214)					
religious								-1.275				
								(1.172)				
law									-0.088			
									(0.236)			
ethnic										0.156		
										(0.394)		
democracy											-0.476	
											(0.491)	
bureau												-0.038
												(0.262)
Constant	5.290	1.953	4.146*	0.456	0.495	0.899	1.260	6.372	1.442	0.747	2.510	1.325
	(4.133)	(1.916)	(2.466)	(1.756)	(2.464)	(1.498)	(1.619)	(5.405)	(1.444)	(1.599)	(2.337)	(1.520)
Number of countries	91	91	91	91	91	91	91	91	91	91	91	91
R-squared	0.031	0.013	0.050	0.013	0.011	0.013	0.010	0.074	0.011	0.012	0.026	0.010
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: OLS specification with robust standard error. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$. $\hat{\beta}GS$ by country is estimated in equation (4b).

Table A11. Country data coverage of the key variables

Country	$\widehat{\beta}GS$ (1)	$\widehat{\beta}VAT$ (2)	$\widehat{\beta}PIT$ (3)	$\widehat{\beta}CIT$ (4)	*fiscap* (5)
Albania	1980-2016				1994-2015
Algeria	1960-2016				
Angola	1985-2016				
Antigua and Barbuda	1989-2016				
Argentina	1960-2016	1974-2016	1976-2016	1979-2016	1985-2014
Armenia	1990-2016				1993-2014
Australia	1960-2016		1974-2016	1960-2016	1980-2015
Austria	1960-2016	1973-2016	1973-2016	1973-2016	1980-2015
Azerbaijan	1990-2016	1992-2016	1992-2016	1992-2016	1993-2015
Bahamas, The	1977-2016				1991-2014
Bahrain	1980-2016		1980-2016	1980-2016	
Bangladesh	1960-2016				
Barbados	1980-2016		1980-2016	1980-2016	1990-2015
Belarus	1990-2016				2003-2015
Belgium	1960-2016	1971-2016	1975-2016	1960-2016	1980-2015
Belize	1980-2016				1990-2015
Benin	1960-2016				
Bhutan	1980-2016				1983-2009
Bolivia	1960-2016		1976-2016	1979-2016	1985-2015
Botswana	1960-2016		1974-2016	1960-2016	
Brazil	1960-2016		1979-2016	1979-2016	1990-2015
Brunei Darussalam	1974-2016				
Bulgaria	1980-2016				1992-2015
Burkina Faso	1960-2015				
Burundi	1960-2016				
Cabo Verde	1980-2016				
Cambodia	1987-2016				1996-2015
Cameroon	1965-2016				
Canada	1960-2016	1991-2016	1981-2016	1981-2016	1980-2015
Central African Republic	1960-2016				
Chad	1960-2016				
Chile	1960-2016	1975-2016	1974-2016	1979-2016	1980-2015
China	1960-2016				2005-2014
Colombia	1960-2016	1989-2016	1976-2016	1979-2016	1980-2016
Comoros	1980-2016				
Congo, Dem. Rep.	1960-2016				
Congo, Rep.	1960-2016				2003-2012

Costa Rica	1960-2016		1974-2016	1979-2016	1990-2015
Croatia	1992-2016				1994-2014
Cuba	1970-2015				
Cyprus	1975-2016				1995-2015
Czech Republic	1990-2016		1991-2016		1993-2015
Côte d'Ivoire	1960-2016				
Denmark	1960-2016	1967-2016	1975-2016	1962-2016	1980-2015
Djibouti	1991-2016				
Dominica	1980-2016				
Dominican Republic	1960-2016	1992-2016	1979-2016	1979-2016	1990-2015
Ecuador	1960-2016	1982-2016	1974-2016	1979-2016	1995-2015
Egypt, Arab Rep.	1965-2016				
El Salvador	1965-2016	1992-2016	1974-2016	1979-2016	2002-2015
Equatorial Guinea	1980-2016				
Eritrea	1992-2016				
Ethiopia	1980-2016				
Fiji	1960-2016	1992-2016	1979-2016	1960-2016	
Finland	1960-2016		1974-2016	1960-2016	1980-2015
France	1960-2016	1968-2016	1960-2016	1960-2016	1980-2015
Gabon	1960-2016		1988-2016		
Gambia, The	1977-2016				
Georgia	1980-2016	1992-2016	1992-2016	1992-2016	2004-2015
Germany	1970-2016	1970-2016	1970-2016	1970-2016	1980-2015
Ghana	1960-2016		1991-2016	1960-2016	
Greece	1960-2016	1987-2016	1975-2016	1961-2016	1980-2015
Grenada	1980-2016				
Guatemala	1960-2016				1990-2014
Guinea	1980-2016				
Guinea-Bissau	1970-2016				
Guyana	1960-2016				2006-2012
Honduras	1960-2016		1979-2016	1979-2016	1991-2015
Hong Kong SAR, China	1961-2016				2001-2014
Hungary	1980-2016	1988-2016	1990-2016	1989-2016	1982-2015
Iceland	1960-2016				1981-2015
India	1960-2016		1974-2016	1966-2016	1980-2014
Indonesia	1960-2016				1998-2015
Iran, Islamic Rep.	1960-2016		1974-2016	1978-2016	1980-1989
Iraq	1970-2016				2004-2009
Ireland	1970-2016				1980-2015
Israel	1960-2016				1980-2015
Italy	1960-2016	1973-2016	1975-2016	1974-2016	1980-2015

Jamaica	1966-2016	1991-2016	1974-2016	1966-2016	1990-2015
Japan	1960-2016	1989-2016	1972-2016	1960-2016	1980-2014
Jordan	1980-2016				2008-2013
Kazakhstan	1992-2016				1993-2014
Kenya	1960-2016		1974-2016	1960-2016	
Korea, Rep.	1960-2016	1978-2016	1974-2016	1980-2016	1980-2015
Kuwait	1965-2016		1965-2016		
Kyrgyz Republic	1987-2016				2001-2015
Lebanon	1980-2016				
Lesotho	1980-2016				1990-2008
Liberia	1960-2016				
Libya	1980-2006				1991-2012
Luxembourg	1960-2016	1970-2016	1974-2016	1963-2016	1980-2015
Macao SAR, China	1982-2016				
Macedonia, FYR	1990-2016				1995-2008
Madagascar	1960-2016				
Malawi	1960-2016				
Malaysia	1960-2016				1990-2014
Maldives	1990-2016				1980-2014
Mali	1967-2016				
Malta	1970-2016		1981-2016	1970-2016	1995-2015
Mauritania	1960-2016				
Mauritius	1976-2016		1988-2016	1976-2016	1990-2014
Mexico	1960-2016	1980-2016	1974-2016	1980-2016	1980-2014
Moldova	1992-2016				1995-2015
Mongolia	1980-2016				1992-2007
Morocco	1966-2016				2000-2014
Mozambique	1980-2016				
Namibia	1980-2016		1991-2016	1991-2016	
Nepal	1975-2016				
Netherlands	1960-2016				1980-2015
New Zealand	1977-2016	1987-2016	1977-2016	1977-2016	1980-2015
Nicaragua	1960-2016				1987-2015
Niger	1960-2016				
Nigeria	1981-2015		1974-2016	1960-2016	1992-2007
Norway	1960-2016	1970-2016	1974-2016	1960-2016	1980-2015
Oman	1967-2015		1977-2015	1977-2015	
Pakistan	1960-2016		1974-2016	1960-2016	1994-2016
Panama	1960-2016				1989-2015
Papua New Guinea	1961-2004		1976-2016	1960-2016	
Paraguay	1980-2016	1991-2016	1980-2016	1980-2016	2005-2015

Peru	1960-2016	1982-2016	1976-2016	1979-2016	1990-2015
Philippines	1960-2016	1988-2016	1979-2016	1980-2016	
Poland	1984-2016				1986-2015
Portugal	1960-2016	1986-2016	1976-2016	1981-2016	1980-2015
Puerto Rico	1960-2013				
Qatar	1980-2016		1980-2016		
Romania	1980-2016				1990-2015
Russian Federation	1989-2016	1992-2016	1990-2016	1990-2016	2000-2015
Rwanda	1960-2016				1996-2014
Saudi Arabia	1968-2016		1968-2016	1977-2016	
Senegal	1960-2016				1997-2014
Seychelles	1976-2015				1993-2015
Sierra Leone	1964-2016				
Singapore	1960-2016				1980-2015
Slovak Republic	1992-2016				1994-2015
Solomon Islands	1980-2016				
Somalia	1960-1984				
South Africa	1960-2016	1992-2016	1974-2016	1960-2016	1980-2015
Spain	1960-2016	1986-2016	1975-2016	1965-2016	1980-2015
Sri Lanka	1961-2016				
St. Kitts and Nevis	1980-2016				
St. Lucia	1977-2016				1989-1999
St. Vincent and the Grenadines	1980-2016				
Sudan	1960-2016				
Suriname	1975-2016				
Swaziland	1970-2016				
Sweden	1960-2016	1969-2016	1960-2016	1960-2016	1980-2015
Switzerland	1980-2016		1981-2016	1981-2016	1980-2015
Syrian Arab Republic	1960-2007				1981-2008
Taiwan, China	1980-2016				
Tajikistan	1985-2015				1998-2015
Tanzania	1980-2016		1988-2016	1980-2016	
Thailand	1960-2016	1992-2016	1974-2016	1975-2016	1980-2015
Togo	1960-2016				
Tonga	1981-2012				
Trinidad and Tobago	1960-2015				1990-2015
Tunisia	1965-2016				1983-2014
Turkey	1960-2016	1985-2016	1960-2016	1983-2016	1980-2015
Uganda	1982-2016				
Ukraine	1989-2016				1992-2015
United Arab Emirates	1980-2016		1980-2016		2012-2015

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United Kingdom	1960-2016	1973-2016	1960-2016	1973-2016	1980-2015
United States	1960-2016		1960-2016	1960-2016	1980-2015
Uruguay	1960-2016	1969-2016	1976-2016	1979-2016	1980-2015
Uzbekistan	1987-2016				1999-2015
Vanuatu	1980-2014				
Venezuela, RB	1960-2014		1979-2014	1979-2014	1990-2015
Vietnam	1989-2016				1992-2015
Yemen, Rep.	1990-2016				1992-2012
Zambia	1980-2016		1981-2016	1980-2016	
Zimbabwe	1960-2016				1980-1989

Note: Data coverage in the columns (1)-(4) for each country are used for estimating $\widehat{\beta}GS$, $\widehat{\beta}VAT$, $\widehat{\beta}PIT$, $\widehat{\beta}CIT$ respectively in the corresponding time-series regression. The variable "fiscap" by country which is used in cross-sectional regressions is average over the corresponding period in column (5).

Table A12. Regional-specific estimated coefficient of Public Debt/Tax Base

Variable	Public Debt/Tax Base	Public Debt/3-year average Tax Base
East Asia & Pacific	0.1182	0.1139
Europe & Central Asia	-0.0643	-0.0581
Latin America & Caribbean	-0.0022	0.0153
Middle East & North Africa	-0.0013	-0.0015
Sub-Saharan Africa	0.1371*	0.1547*

Note:

$\widehat{\beta}GS$ *by country are estimated in equation (1) using Prais-Winsten. The regional-specific estimated coefficient of Public Debt/Tax Base by region is from the corresponding cross-sectional regression for the region (similar to equation (2), that is $\widehat{\beta}GS$ = f[Public Debt/Tax Base, Control Variables]). We also run similar regression by region using public debt/3-year average tax base alternatively. * denotes the coefficient is significant at 10%*

Figure A1. Correlation of $\hat{\beta}GS$ and Public Debt/Tax Base across countries by region, 1960-2016
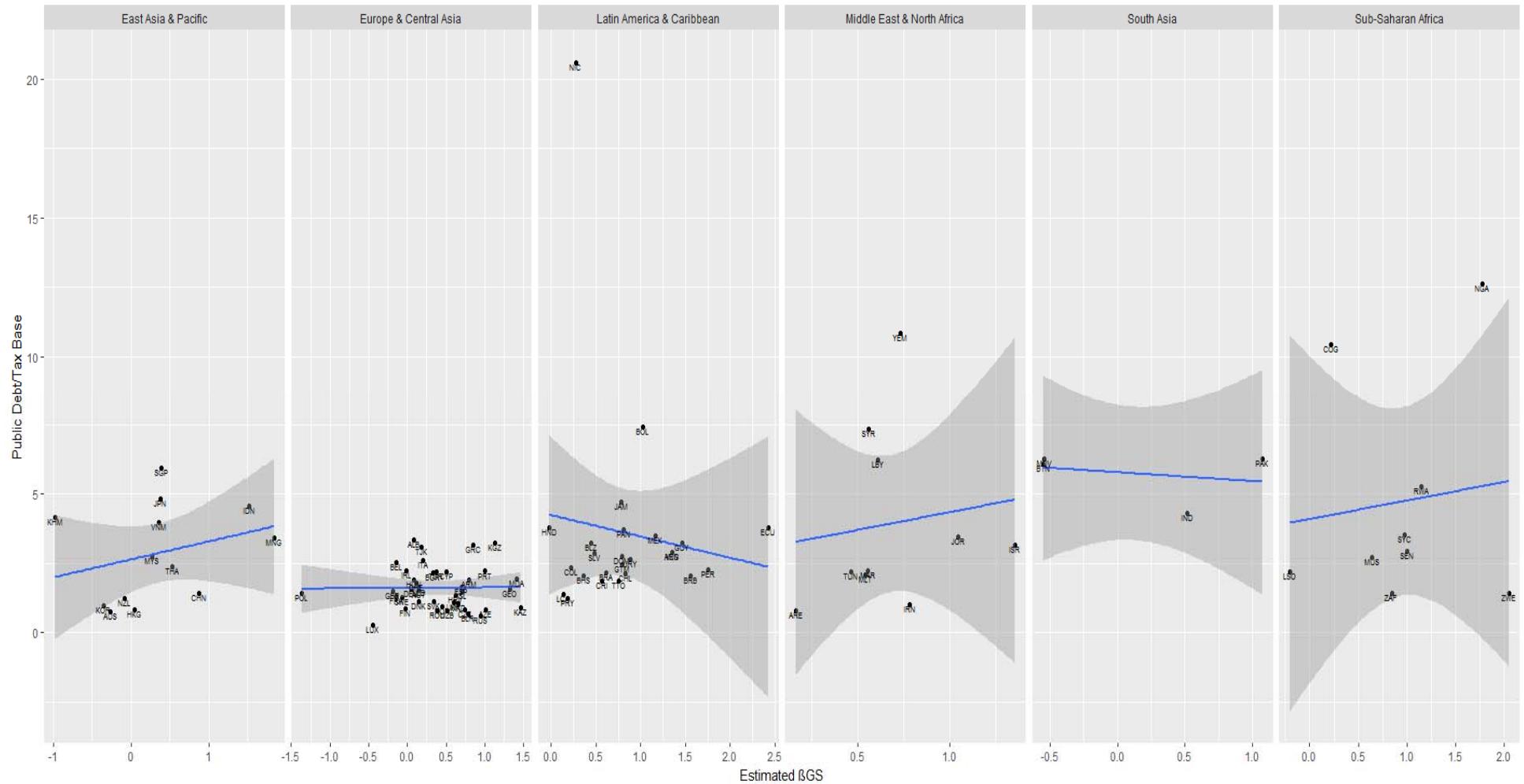
Note:

The blue lines are the linear regression lines of public debt/tax base on $\hat{\beta}GS$ by region. The graphs shows the clusters of the countries by region, as most of the countries by region either gather as a group or lie in the 95% confidence interval, which is the shaded area. For Middle East & North Africa, we dropped Iraq out of the graph as it is an extreme case with its average public debt/tax base over the 1960-2016 period being approximately 335.23. This helps get clearer cluster trend in the region and still does not change the trend otherwise. North America is not included because of the data insufficiency. $\hat{\beta}GS$ by country are estimated from equation (1) using Prais-Winsten approach.

Figure A2. Correlation of $\widehat{\beta}GS$ and Public Debt/3-year Average Tax Base across countries by region, 1960-2016
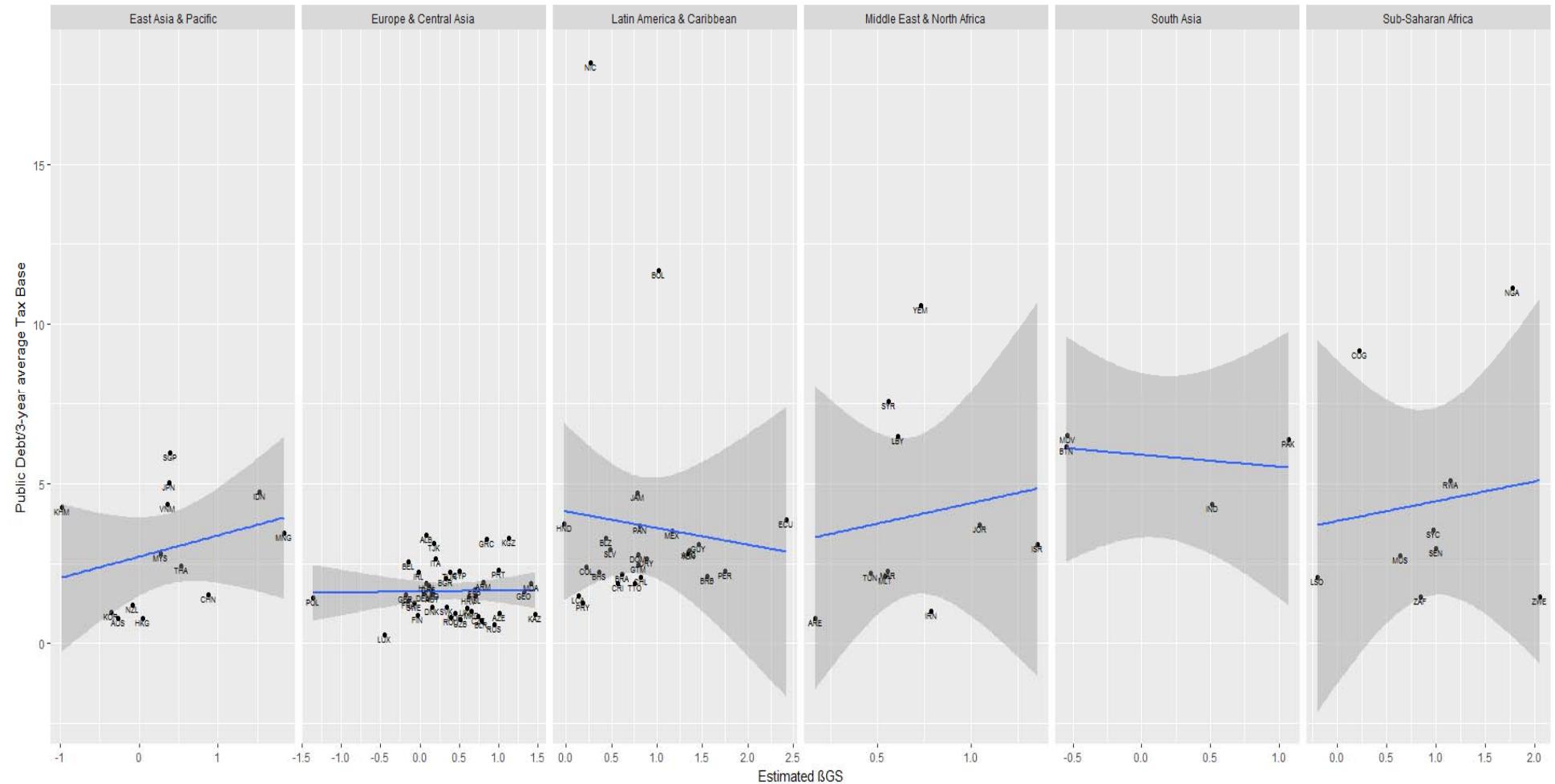
Note:

The blue lines are the linear regression lines of public debt/3-year average tax base on $\widehat{\beta}GS$ by region. The graphs shows the clusters of the countries by region, as most of the countries by region either gather as a group or lie in the 95% confidence interval, which is the shaded area. For Middle East & North Africa, we dropped Iraq out of the graph as it is an extreme case with average public debt/3-year average tax base over the 1960-2016 period being approximately 289.6. This helps get clearer cluster trend in the region and still does not change the trend otherwise. North America is not included because of the data insufficiency. $\widehat{\beta}GS$ by country are estimated from equation (1) using Prais-Winsten approach.