Online Appendix

to

DEBT REDUCTION, FISCAL ADJUSTMENT, AND GROWTH IN CREDIT-CONSTRAINED ECONOMIES

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This appendix presents a series of tables which are the results of estimating the baseline model on different subsamples. In particular, we present nine robustness tests on subsamples of episodes with high initial unemployment, high tax revenue countries, episodes where no major debt reduction occurred, episodes in the aftermath of financial crises, countries which implemented substantial structural reforms during the consolidation episode, an expanded version of the sample with 160 episodes of debt reduction, and two additional subsamples of advanced economies and open economies. The purpose of all these tests was to confirm if the main results obtained in the baseline model regarding the relationship between fiscal adjustment and growth when interacted with credit constraints held under different sample definitions.

Table A1. Augmented Model. Dependent Variable 5-year average post-episode growth. Sub-sample High Initial Unemployment Episodes

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.0170**	-0.0193**	-0.0120*	-0.0106	-0.000274	-0.0243**
	(2.484)	(2.415)	(1.744)	(1.521)	(0.0285)	(2.332)
Duration of consolidation	0.307*	0.328**	0.307**	0.428*	0.465*	0.418*
	(2.003)	(2.06)	(2.051)	(2.005)	(1.978)	(1.912)
Size of deficit cut	-0.108*	-0.121**	-0.107*	-0.138**	-0.182**	-0.0764
	(1.894)	(2.045)	(1.843)	(2.374)	(2.464)	(0.84)
Contemporaneous Growth	0.123	0.139	0.225**	0.192**	0.421**	0.0296
	(1.34)	(1.395)	(2.471)	(2.102)	(2.577)	(0.23)
Quality of fiscal adjustment	-0.0141*	-0.0156*	-0.0254***	-0.0241***	-0.0016	-0.00418
	(1.739)	(1.681)	(3.255)	(3.067)	(0.12)	(0.422)
Quality* Credit constraints	-0.0610*	-0.0581*	-0.0897*	-0.0870*	-0.0797*	-0.0502*
	(1.704)	(1.63)	(1.759)	(1.691)	(1.744)	(1.805)
Change in direct taxes[1]	0.0316***					
	(3.376)					
Change in taxes on goods and services[1]		-0.0321				
		(1.614)				
Change in goods & services expenditures[1]			-0.0830***			
			(2.868)			
Change in wage expenditures[1]				-0.0185		
				(0.358)		
Change in transfers expenditures[1]					0.0600**	
					(2.448)	
Change in public investment expenditures[1]						0.0347*
						(1.89)
Constant	3.222***	3.282***	3.409***	4.035***	1.945	3.470***
	(3.664)	(3.462)	(3.849)	(4.519)	(1.466)	(3.492)
Number of obs.	111	111	111	111	79	102
R-squared	0.404	0.354	0.387	0.374	0.504	0.313
Prob > F	0	0	0	0	0	0

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A2. Augmented Model. Dependent Variable 5-year average post-episode growth. Sub-sample High-Tax Countries

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.0119**	-0.0250***	-0.0101**	-0.0104**	-0.0321***	-0.0176***
	(2.374)	(4.105)	(2.043)	(2.118)	(6.075)	(3.026)
Duration of consolidation	0.135**	0.169**	0.115*	0.141**	0.234***	0.291***
	(2.125)	(2.574)	(1.77)	(2.186)	(3.905)	(3.722)
Size of deficit cut	0.0276	-0.0283	-0.0178	-0.0244	0.174***	0.105**
	(0.588)	(0.581)	(0.426)	(0.586)	(3.659)	(2.263)
Contemporaneous Growth	0.241***	0.490***	0.235***	0.261***	0.272***	0.231***
	(4.294)	(6.751)	(4.093)	(4.673)	(4.828)	(3.918)
Quality of fiscal adjustment	0.0319	-0.0708	-0.0728	0.0333	-0.0128**	0.0304***
	(0.568)	(1.211)	(1.188)	(0.0593)	(2.386)	(3.938)
Quality* Credit constraints	-0.0132***	-0.0150***	-0.00672	-0.0108**	-0.00686	-0.0343***
	(2.614)	(2.964)	(1.255)	(2.112)	(1.416)	(5.067)
Change in direct taxes[1]	0.0345***					
	(4.105)					
Change in taxes on goods and services[1]		-0.0354***				
		(4.025)				
Change in goods & services expenditures[1]			-0.0805***			
			(2.837)			
Change in wage expenditures[1]				0.0638***		
				(3.231)		
Change in transfers expenditures[1]					0.203***	
					(6.328)	
Change in public investment expenditures[1]						0.00171
						(0.109)
Constant	2.414***	2.920***	2.784***	2.559***	2.903***	2.595***
	(5.65)	(6.184)	(6.298)	(5.925)	(6.396)	(6.135)
Number of obs.	190	188	191	191	157	170
R-squared	0.246	0.255	0.209	0.219	0.398	0.258
Prob > F	0	0	0	0	0	0

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A3. Augmented Model. Dependent Variable 5-year average post-episode growth. Sub-sample Non-major Debt Reductions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.00365	-0.0203***	-0.000636	-0.00334	-0.00417	-0.00216
	(0.596)	(3.152)	(0.107)	(0.525)	(0.528)	(0.309)
Duration of consolidation	0.236***	0.125**	0.258***	0.235***	0.250***	0.229***
	(3.909)	(2.045)	(4.167)	(3.805)	(3.257)	(3.311)
Size of deficit cut	-0.0427	-0.0869	-0.0956*	-0.102**	-0.0865	-0.0668
	(0.748)	(1.597)	(1.903)	(2.019)	(1.222)	(1.214)
Contemporaneous Growth	0.574***	0.781***	0.602***	0.581***	0.649***	0.557***
	(10.23)	(13.24)	(10.91)	(10.44)	(9.344)	(8.4)
Quality of fiscal adjustment	0.0259***	0.00922*	0.0238***	0.0227***	0.0274***	0.0235***
	(5.21)	(1.796)	(5.008)	(4.654)	(4.615)	(3.611)
Quality* Credit constraints	-0.0282***	-0.0180***	-0.0290***	-0.0260***	-0.0295***	-0.0253***
	(5.669)	(4.618)	(5.143)	(5.041)	(5.802)	(4.162)
Change in direct taxes[1]	0.0220**					
	(2.03)					
Change in taxes on goods and services[1]		-0.0494***				
		(5.702)				
Change in goods & services expenditures[1]			-0.0116			
			(0.503)			
Change in wage expenditures[1]				-0.0195		
				(0.708)		
Change in transfers expenditures[1]					0.0584	
					(1.653)	
Change in public investment expenditures[1]						0.0658*
						(1.819)
Constant	-0.249	0.653	-0.281	0.0756	-1.209**	-0.0656
	(0.63)	(1.554)	(0.684)	(0.179)	(2.151)	(0.142)
Number of obs.	247	244	244	248	191	224
R-squared	0.45	0.521	0.451	0.44	0.452	0.414
Prob > F	0	0	0	0	0	0

***significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A4. Augmented Model. Dependent Variable 5-year average post-episode growth. Sub-sample Post-Crisis Episodes

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.0196***	-0.00206	-0.0182***	-0.0153***	-0.0197*	-0.00862
	(3.204)	(0.311)	(3.187)	(2.609)	(1.891)	(1.386)
Duration of consolidation	0.338***	0.164**	0.317***	0.312***	0.334***	0.338***
	(5.083)	(2.329)	(4.829)	(4.369)	(3.934)	(4.42)
Size of deficit cut	-0.331***	-0.373***	-0.296***	-0.328***	-0.294***	-0.290***
	(6.252)	(7.508)	(6.351)	(6.938)	(3.775)	(5.641)
Contemporaneous Growth	0.468***	0.685***	0.480***	0.489***	0.494***	0.361***
	(7.804)	(10.69)	(8.091)	(8.056)	(6.388)	(4.95)
Quality of fiscal adjustment	0.0513**	0.0326*	0.0520**	0.0461*	0.0552*	0.0567**
	(2.19)	(1.941)	(2.565)	(1.888)	(1.717)	(2.651)
Quality* Credit constraints	-0.493***	-0.437***	-0.394***	-0.315***	-0.306***	-0.396***
	(9.521)	(8.461)	(9.199)	(8.757)	(8.696)	(8.425)
Change in direct taxes[1]	0.0234**					
	(2.414)					
Change in taxes on goods and services[1]		-0.0484***				
		(5.497)				
Change in goods & services expenditures[1]			0.0792***			
			(3.394)			
Change in wage expenditures[1]				-0.013		
				(0.519)		
Change in transfers expenditures[1]					0.0592*	
					(1.843)	
Change in public investment expenditures[1]						0.0798***
						(4.932)
Constant	-0.307	1.058**	-0.459	0.0966	-0.782	0.434
	(0.701)	(2.166)	(1.012)	(0.195)	(1.225)	(0.936)
Number of obs.	223	221	219	223	158	197
R-squared	0.554	0.606	0.573	0.54	0.537	0.56
Prob > F	0	0	0	0	0	0

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A5. Augmented Model. Dependent Variables 5-year average post-episode growth. Sub-sample High Credit Constraint

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.0195***	-0.00577	-0.0167***	-0.0165***	-0.0106	-0.0208***
	(3.252)	(0.889)	(2.879)	(2.867)	(1.058)	(3.324)
Duration of consolidation	0.356***	0.242***	0.359***	0.376***	0.325***	0.361***
	(4.85)	(3.199)	(4.772)	(5.033)	(3.147)	(4.563)
Size of deficit cut	-0.354***	-0.397***	-0.335***	-0.350***	-0.180**	-0.357***
	(6.018)	(7.185)	(6.317)	(6.942)	(2.116)	(6.823)
Contemporaneous Growth	0.590***	0.811***	0.629***	0.622***	0.748***	0.557***
	(9.218)	(11.51)	(9.633)	(9.668)	(8.808)	(7.023)
Quality of fiscal adjustment	0.0331***	0.0125*	0.0304***	0.0301***	0.0366***	0.0361***
	(5.388)	(1.845)	(4.899)	(4.845)	(5.03)	(4.832)
Quality* Credit constraints	-0.0357***	-0.0202***	-0.0334***	-0.0340***	-0.0399***	-0.0393***
	(5.668)	(4.515)	(5.076)	(5.235)	(6.112)	(5.529)
Change in direct taxes[1]	0.0310***					
	(2.751)					
Change in taxes on goods and services[1]		-0.0483***				
		(4.94)				
Change in goods & services expenditures[1]			0.0181			
			(0.829)			
Change in wage expenditures[1]				0.0343		
				(1.245)		
Change in transfers expenditures[1]					0.201***	
					(4.749)	
Change in public investment expenditures[1]						0.0924***
						(3.356)
Constant	-0.462	0.584	-0.497	-0.418	-1.449**	-0.193
	(1.048)	(1.21)	(1.069)	(0.867)	(2.364)	(0.387)
Number of obs.	229	227	226	230	161	217
R-squared	0.52	0.561	0.516	0.505	0.56	0.495
Prob > F	0	0	0	0	0	0

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A6. Augmented Model. Dependent Variable 5-year average post-episode growth. Sub-sample Structural Reform Episodes

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.00714	-0.0127*	-0.00469	-0.00551	-0.0109	-0.000574
	(1.007)	(1.82)	(0.722)	(0.86)	(1.214)	(0.0714)
Duration of consolidation	0.288***	0.189**	0.271***	0.307***	0.262***	0.358***
	(3.658)	(2.215)	(3.3)	(3.996)	(3.037)	(3.829)
Size of deficit cut	-0.166**	-0.187**	-0.156**	-0.169***	-0.263***	-0.258***
	(2.033)	(2.402)	(2.572)	(2.89)	(3.017)	(3.92)
Contemporaneous Growth	0.684***	0.737***	0.664***	0.678***	0.690***	0.455***
	(8.661)	(9.58)	(8.791)	(8.88)	(6.886)	(4.227)
Quality of fiscal adjustment	0.00704	0.0014	0.00902*	0.00992	0.0249*	0.00582
	(0.878)	(0.17)	(1.195)	(1.304)	(1.924)	(1.497)
Quality* Credit constraints	-0.0151***	-0.00935*	-0.0157***	-0.0166***	-0.00859*	-0.00683*
	(2.651)	(1.837)	(2.922)	(3.05)	(1.736)	(1.856)
Change in direct taxes[1]	0.00725					
	(0.65)					
Change in taxes on goods and services[1]		-0.0514***				
		(2.959)				
Change in goods & services expenditures[1]			0.0241			
			(0.888)			
Change in wage expenditures[1]				-0.0194		
				(0.873)		
Change in transfers expenditures[1]					0.0697**	
					(2.049)	
Change in public investment expenditures[1]						0.0937***
						(4.639)
Constant	0.147	0.826	0.103	-0.0795	-0.557	1.675**
	(0.254)	(1.181)	(0.187)	(0.14)	(0.763)	(2.269)
Number of obs.	159	157	165	165	120	135
R-squared	0.44	0.495	0.445	0.445	0.53	0.478
Prob > F	0	0	0	0	0	0

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A7. Augmented Model. Dependent Variable 5-year average post-episode growth. Enlarged Sample of 160 Episodes

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.00540***	-0.00646***	-0.00316***	-0.00366***	-0.00359***	-0.00454***
	(4.407)	(5.202)	(2.755)	(3.904)	(3.578)	(5.181)
Duration of consolidation	0.178***	0.149***	0.125***	0.198**	0.064**	0.094***
	(5.913)	(4.809)	(4.281)	(2.803)	(2.228)	(3.148)
Size of deficit cut	-0.182***	-0.101***	-0.139***	-0.216***	-0.266***	-0.283***
	(7.134)	(7.662)	(7.74)	(5.09)	(4.193)	(6.169)
Contemporaneous Growth	0.398***	0.337***	0.268***	0.182***	0.114***	0.200***
	(8.307)	(6.855)	(5.817)	(4.528)	(2.708)	(5.461)
Quality of fiscal adjustment	0.0660***	0.0910***	0.0463***	-0.0172	-0.0143	0.0387***
	(3.448)	(4.629)	(2.619)	(1.113)	(0.845)	(2.757)
Quality* Credit constraints	-0.0217***	-0.0229***	-0.0186***	-0.00667***	-0.0111***	-0.0147***
	(7.712)	(7.891)	(7.062)	(3.008)	(4.668)	(7.163)
Change in direct taxes[1]	0.0146**					0.0279***
	(2.398)					(8.909)
Change in taxes on goods and services[1]		-0.0143***				
		(3.337)				
Change in goods & services expenditures[1]			-0.0207***			
			(6.425)			
Change in wage expenditures[1]				-0.0547**		
				(2.201)		
Change in transfers expenditures[1]					0.0746*	
					(1.887)	
Change in public investment expenditures[1]						0.0279***
						(8.909)
Constant	-0.0778**	-0.0447	-0.00605	0.0980***	0.170***	0.0362
	(2.193)	(1.233)	(0.175)	(3.106)	(4.955)	(1.31)
Number of obs.	480	450	527	469	499	633
R-squared	0.413	0.431	0.391	0.382	0.359	0.393
Prob > F	0	0	0	0	0	0

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A8. Augmented Model. Dependent Variable 5-year average post-episode growth. Subsample of Advanced Countries

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.0219	-0.0104	-0.116***	-0.0572**	-0.0219	-0.138***
	(1.282)	(0.627)	(8.959)	(2.387)	(1.257)	(7.285)
Duration of consolidation	0.0172	0.0388	0.616***	0.323**	0.112	-0.224***
	(0.169)	(0.344)	(7.667)	(2.104)	(1.081)	(3.16)
Size of deficit cut	-0.0725	0.385***	0.184***	0.127	0.515***	0.606***
	(0.498)	(4.044)	(3.392)	(0.932)	(5.877)	(10.12)
Contemporaneous Growth	0.505***	0.289	0.333***	0.543***	1.471***	0.650***
	(4.202)	(1.309)	(4.573)	(3.905)	(4.625)	(3.205)
Quality of fiscal adjustment	0.0481*	0.0317	0.110*	0.0755*	0.0204	0.106*
	(1.693)	(1.458)	(1.944)	(1.858)	(0.838)	(1.803)
Quality* Credit constraints	-0.0340**	-0.0105	-0.0524***	-0.0318**	-0.0178*	0.0398***
	(2.31)	(1.024)	(7.758)	(2.514)	(1.471)	(4.361)
Change in direct taxes[1]	0.474***					
	(3.912)					
Change in taxes on goods and services[1]		-0.0312				
		(0.472)				
Change in goods & services expenditures[1]			-0.765***			
			(11.73)			
Change in wage expenditures[1]				-0.137**		
				(2.556)		
Change in transfers expenditures[1]					0.429***	
					(3.708)	
Change in public investment expenditures[1]						0.498***
						(6.254)
Constant	6.604***	-0.0498	-5.351***	-1.733	4.868***	4.862***
	(3.252)	(0.0371)	(6.138)	(1.208)	(2.791)	(5.911)
Number of obs.	94	94	94	94	94	97
R-squared	0.498	0.381	0.801	0.436	0.488	0.847
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.
(1) In percent of total revenues or total expenditures.

Table A9. Augmented Model. Dependent Variable 5-year average post-episode growth. Subsample of Open Economies

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Initial distance from debt target	-0.0219	-0.0104	-0.116***	-0.0572**	-0.0219	-0.138***
	(1.282)	(0.627)	(8.959)	(2.387)	(1.257)	(7.285)
Duration of consolidation	0.0172	0.0388	0.616***	0.323**	0.112	-0.224***
	(0.169)	(0.344)	(7.667)	(2.104)	(1.081)	(3.16)
Size of deficit cut	-0.0725	0.385***	0.184***	0.127	0.515***	0.606***
	(0.498)	(4.044)	(3.392)	(0.932)	(5.877)	(10.12)
Contemporaneous Growth	0.505***	0.289	0.333***	0.543***	1.471***	0.650***
	(4.202)	(1.309)	(4.573)	(3.905)	(4.625)	(3.205)
Quality of fiscal adjustment	0.0481*	0.0317	0.110*	0.0755*	0.0204	0.106*
	(1.693)	(1.458)	(1.944)	(1.858)	(0.838)	(1.803)
Quality* Credit constraints	-0.0340**	-0.0105	-0.0524***	-0.0318**	-0.0178*	0.0398***
	(2.31)	(1.024)	(7.758)	(2.514)	(1.471)	(4.361)
Change in direct taxes[1]	0.474***					
	(3.912)					
Change in taxes on goods and services[1]		-0.0312				
		(0.472)				
Change in goods & services expenditures[1]			-0.765***			
			(11.73)			
Change in wage expenditures[1]				-0.137**		
				(2.556)		
Change in transfers expenditures[1]					0.429***	
					(3.708)	
Change in public investment expenditures[1]						0.498***
						(6.254)
Constant	6.604***	-0.0498	-5.351***	-1.733	4.868***	4.862***
	(3.252)	(0.0371)	(6.138)	(1.208)	(2.791)	(5.911)
Number of obs.	94	94	94	94	94	97
R-squared	0.498	0.381	0.801	0.436	0.488	0.847
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

(1) In percent of total revenues or total expenditures.