

## ONLINE APPENDIX

### What Lies Beneath: The Statistical Definition of Public Sector Debt

This appendix further elaborates the nomenclature for the public sector and shows additional country-by-country data on the concepts discussed in the main paper. Figure 1 lays out the generic structure of government as defined in the international macroeconomic statistical methodologies for example the [2008 System of National Accounts 2008 \(2008 SNA\)](#), the [Government Finance Statistics Manual 2001 \(GFSM 2001\)](#) and the [Public Sector Debt Statistics Guide](#). The general government (**GL3**) is a portion of the broader concepts of the nonfinancial public sector (**GL4**) and the public sector (**GL5**). **GL3** and its subcomponents (**GL2**, central government) and **GL1** (budgetary central government) were discussed in the main paper. **GL3** is the broadest level of government for which cross country time-series data are available and the IMF's *Government Finance Statistics Yearbook (GFSY)* is a comprehensive source. The newly created IMF- World Bank public sector debt statistics database (<http://www.worldbank.org/qpsd>) is designed with potentially broader and more comprehensive coverage (including **GL5**). Some countries publish data on **GL5** and its subcomponents. However, these countries do not necessarily publish data on **GL3**. Building a government finance database for **GL5** and its subcomponents therefore will require substantial efforts by country authorities.

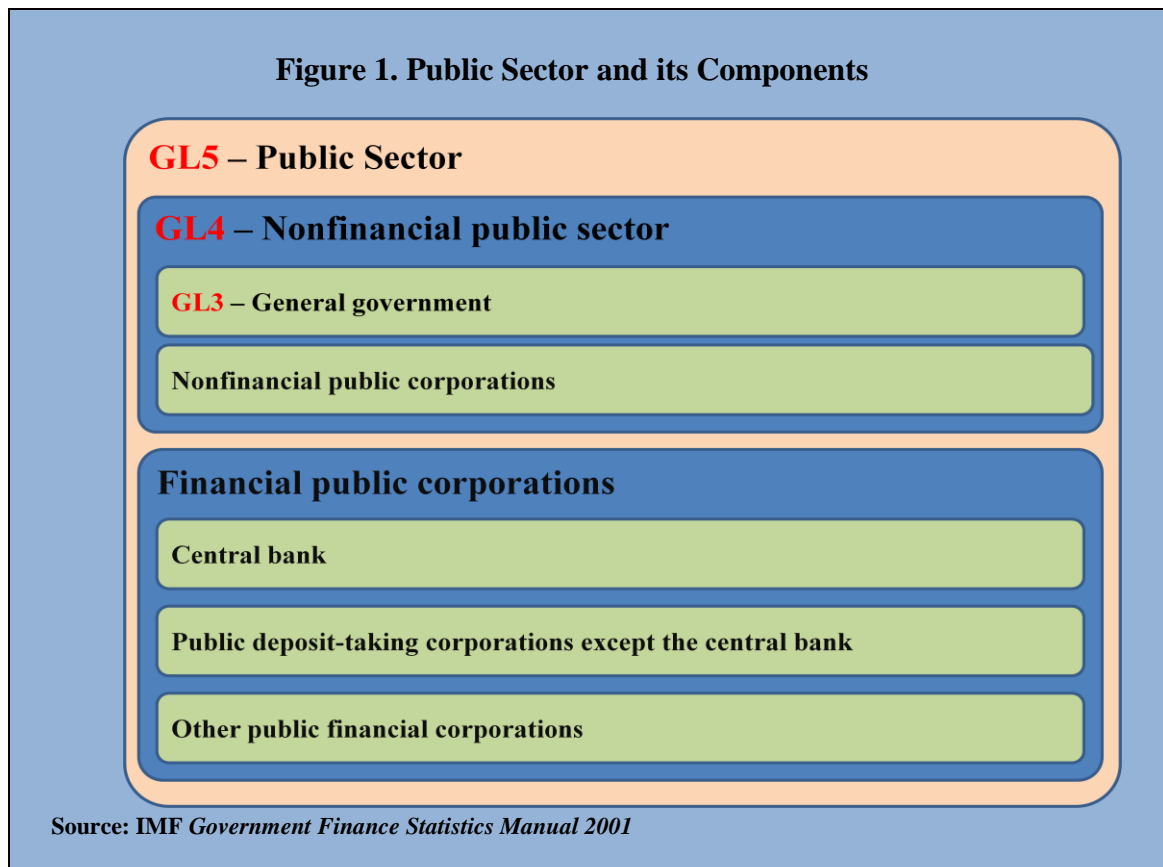
The analysis presented in the main paper is focused on general government (**GL3**) while economists often limit the analysis to debt for the central government (**GL2**) mainly because central government debt data are more readily available and with higher frequency (often monthly or quarterly). However, a comprehensive macroeconomic analysis calls for coverage of **GL3**, comprising **GL2** and state and local government. Figure 2 provides some empirical evidence. It shows debt to GDP ratios of state and local governments for selected countries. More specifically the data show debt securities outstanding and there may be other, additional debt instruments used by state and local governments not included in this figure. State and local government debt can be substantial ranging from about 4-5 percent of GDP to over 30 percent of GDP presenting potential fiscal risks for the economy. These examples highlight the importance of basing fiscal analysis on a comprehensive measure of government (**GL3**).

Table 1 provides country-by-country data on the various debt instruments broken down by general government (**GL3**), central government (**GL2**), and budgetary central government (**GL1**). As explained in the main paper, **D1** refers to debt securities and loans. **D2** includes **D1** plus Special Drawing Rights (SDRs) and currency and deposits. **D3** includes **D2** and other accounts payable, and **D4** includes **D3** and Insurance, Pension, and Standardized Guarantee Schemes (IPSGS). The table also shows the GDP expressed in domestic currency used to calculate the ratios.

The lack of a global database for public debt has been widely discussed in the academic literature and in 2010, the IMF and World Bank launched the public sector debt statistics database. As of May 2012, about 50 countries provide data to this free-of-charge online database (<http://www.worldbank.org/qpsd>) and participation is increasing. Table 2 summarized the standard tables included in this database along with the indicators. This database was

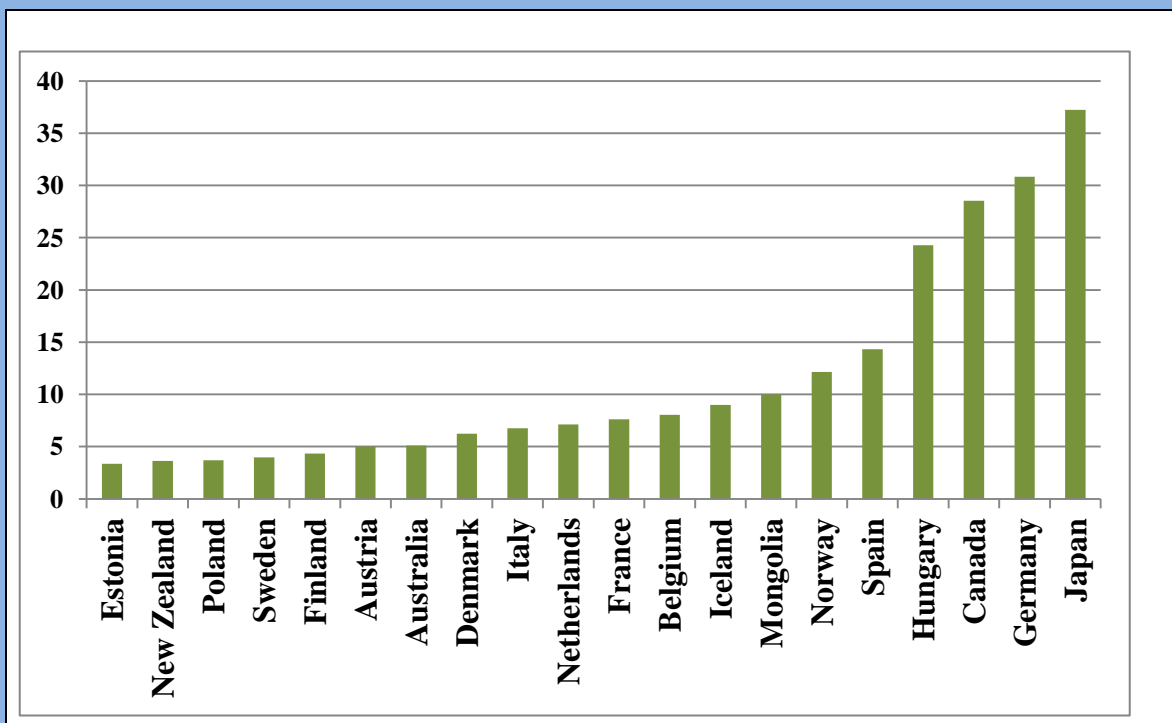
developed in collaboration with experts on economic debt sustainability analysis and with experts on debt management software systems (particularly for low income and emerging economies) to ensure that the indicators are relevant for policy analysis and most likely available for a broad range of advanced and emerging economies.

The nomenclature of debt instruments developed in the main paper broadly followed the extent of marketability with debt securities as the most marketable instruments. However, the authors acknowledged that other nomenclatures could be considered for example by rank ordering instruments by degrees of “certainty” of the liabilities. Table 3 classifies debt instruments in accounting terminology as compared with the statistical terminology although both are remarkable similar. The table includes debt instruments not included in the analysis shown in the main paper for example contingent liabilities where data are not readily available. This table provides some suggestions for further research on characterizing government debt instruments.



**Figure 2. Selected Countries: Loans and Debt Securities Outstanding by the State and Local Governments (2010)**

Difference between *GL3 D1* and *GL2 D1* (percent of GDP)



Source: IMF Government Finance Statistics Yearbook 2011, IMF World Economic Outlook October 2011

**Table 1. Public Sector Gross Debt Statistics by Institutional and Instrument Coverage, 2010 (in percent of GDP)**

Government Subsector		GL1				GL2				GL3			
Country	GDP*	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
Australia	1345.7	...	...	...	...	12.7	13.0	16.9	27.8	17.8	18.4	26.7	45.6
Austria	284.4	71.5	71.5	72.8	72.8	72.2	72.2	73.9	73.9	77.2	77.2	78.0	78.0
Azerbaijan, Rep. of	43.7	6.2	6.2	...	...	6.2	...	...	...	...	...	...	...
Bahamas, The	7.8	42.6	42.6	...	...	...	...	...	...	...	...	...	...
Bahrain, Kingdom of	8.5	33.7	33.7	34.4	34.4	...	...	...	...	...	...	...	...
Barbados	8.4	100.1	101.5	102.7	102.7	...	...	...	...	...	...	...	...
Belarus	162963.6	18.7	18.7	...	...	18.7	...	...	...	21.9	...	...	...
Belgium	352.5	87.8	88.2	91.5	91.5	88.2	88.6	92.3	92.3	96.3	96.7	100.5	100.7
Brazil	3675.0	...	...	...	...	53.6	53.6	...	...	54.7	...	...	...
Canada	1624.6	38.2	38.6	43.4	52.5	38.3	38.6	43.5	52.6	66.8	67.2	90.6	104.2
Colombia	546951.0	37.6	40.8	60.6	60.6	35.1	38.9	70.9	70.9	36.3	37.2	72.6	72.6
Costa Rica	18819.1	29.3	29.3	38.9	38.9	...	...	...	...	...	...	...	...
Czech Republic	3667.4	36.1	36.1	...	...	36.2	...	...	...	38.9	...	...	...
Denmark	1742.7	39.9	39.9	44.3	44.3	40.0	40.0	44.4	44.4	46.2	47.0	55.6	55.6
El Salvador	21.2	43.1	43.1	47.8	47.8	43.7	43.7	49.5	49.5	44.7	...	...	...
Estonia	14.5	3.3	3.3	8.5	8.5	3.3	3.3	9.0	9.0	6.6	6.6	12.3	12.3
Finland	180.3	46.2	46.4	48.3	48.3	46.2	46.4	49.7	49.7	50.5	50.8	56.8	56.8
France	1932.8	69.3	72.6	76.4	76.4	78.5	81.8	88.6	88.6	86.1	87.3	95.1	95.1
Georgia	20.8	33.5	33.5	...	...	33.5	...	...	...	...	...	...	...
Germany	2476.8	55.5	55.9	56.0	56.0	55.5	55.9	56.1	56.1	86.3	86.7	86.9	86.9

Source: *Government Finance Statistics Yearbook 2011*

\*Billions of domestic currency

GL3 = general government; GL2 = central government; GL1 = budgetary central government. D1 refers to debt securities and loans. D2 includes D1 plus Special Drawing Rights (SDRs) and currency and deposits. D3 includes D2 and other accounts payable, and D4 includes D3 and Insurance, Pension, and Standardized Guarantee Schemes (IPSGS).

**Table 1. Public Sector Debt Statistics by Institutional and Instrument Coverage 2010 (in percent of GDP) *continued***

Government Subsector		GL1				GL2				GL3			
Country	GDP*	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
Greece	230.2	122.7	123.1	127.3	127.3	123.0	123.4	129.3	129.3	115.1	115.6	121.8	121.8
Guatemala	331.8	24.5	24.5	...	...	...	...	...	...	...	...	...	...
Hungary	27119.8	75.3	75.4	79.8	79.8	55.6	55.7	60.2	60.2	79.8	79.9	85.1	85.1
Iceland	1539.5	83.8	83.8	87.6	110.0	83.8	83.8	88.9	111.3	92.8	92.8	100.9	125.8
India	78796.7	32.8	32.8	...	...	32.8	32.8	46.1	46.1	...	...	...	...
Ireland	156.0	...	...	...	...	...	...	...	...	79.4	88.2	91.9	91.9
Italy	1548.8	101.7	116.0	117.4	117.4	101.7	116.0	117.6	117.6	108.5	122.7	126.7	126.7
Japan	479172.5	...	...	...	...	168.4	168.4	172.8	172.8	205.7	205.7	211.7	211.7
Jordan	18.8	61.4	61.4	...	...	...	...	...	...	...	...	...	...
Kazakhstan	21,815.5	...	...	...	...	10.2	...	...	...	10.3	...	...	...
Latvia	12.7	38.1	38.1	...	...	38.1	38.1	45.9	45.9	41.4	41.4	53.0	53.0
Lithuania	94.6	36.3	36.4	41.0	41.0	37.2	37.6	43.2	43.2	38.6	39.0	45.3	45.3
Luxembourg	41.6	16.6	17.1	17.1	17.1	16.1	16.6	...	...	18.3	18.8	...	...
Malaysia	766.0	53.1	53.1	...	...	...	...	...	...	...	...	...	...
Malta	6.2	71.6	72.2	78.0	78.0	72.7	73.4	81.7	81.7	72.8	73.5	82.1	82.1
Mauritius	299.3	50.4	50.4	...	...	37.8	37.8	...	...	...	...	...	...
Moldova	71.8	23.3	23.3	...	...	23.3	...	...	...	23.3	...	...	...
Mongolia	8,414.5	36.1	36.1	...	...	40.3	...	...	...	50.3	...	...	...
Morocco	767.1	50.1	50.1	...	...	50.1	50.1	...	...	51.3	...	...	...
Nepal	1,171.0	34.5	34.5	...	...	...	...	...	...	...	...	...	...

Source: *Government Finance Statistics Yearbook 2011*

\*Billions of domestic currency

GL3 = general government; GL2 = central government; GL1 = budgetary central government. D1 refers to debt securities and loans. D2 includes D1 plus Special Drawing Rights (SDRs) and currency and deposits. D3 includes D2 and other accounts payable, and D4 includes D3 and Insurance, Pension, and Standardized Guarantee Schemes (IPSGS).

**Table 1. Public Sector Debt Statistics by Institutional and Instrument Coverage, 2010 (in percent of GDP) *continued***

Government Subsector		GL1				GL2				GL3			
Country	GDP*	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
Netherlands	588.3	60.2	60.3	63.4	63.4	58.6	58.7	61.5	61.5	65.8	65.8	70.6	70.6
New Zealand	194.7	...	...	...	...	21.5	25.1	43.6	48.7	25.1	28.7	48.4	53.5
Norway	2,496.2	...	...	...	...	32.0	32.0	35.8	35.8	44.1	44.1	49.4	49.4
Peru	434.6	20.1	20.1	...	...	22.1	...	...	...	22.2	...	...	...
Poland	1,415.4	50.4	50.4	50.4	50.4	52.1	52.1	52.1	52.1	55.7	55.7	55.7	55.7
Portugal	172.7	79.5	90.2	94.0	94.0	79.5	90.2	94.4	94.4	82.1	92.6	97.4	97.4
Russian Federation	44,939.2	8.1	8.1	9.2	9.2	8.1	8.1	9.4	9.4	9.8	9.8	11.4	11.4
Serbia, Republic of	2,986.6	37.1	37.1	...	...	38.0	...	...	...	38.0	...	...	...
Seychelles	11.3	77.1	78.0	...	...	77.1	78.0	78.2	78.2	77.1	78.0	78.2	78.2
Slovak Republic	65.9	39.9	43.2	45.3	45.3	39.9	43.3	46.4	46.4	41.7	45.0	49.1	49.1
South Africa	2,742.0	35.6	35.6	...	...	...	...	...	...	...	...	...	...
Spain	1,062.6	50.8	51.2	53.2	53.2	45.1	45.4	47.4	47.4	59.4	59.7	66.1	66.1
Sweden	3,306.3	35.3	36.9	38.3	38.3	36.0	37.6	39.2	39.2	40.0	41.6	46.6	48.7
Thailand	9,921.0	29.3	29.3	...	...	29.3	29.3	...	...	...	...	...	...
Tunisia	63.4	31.4	40.5	...	...	31.4	40.5	...	...	...	...	...	...
Turkey	1,105.1	47.8	48.0	50.5	50.5	44.0	44.9	51.9	51.9	45.5	46.4	55.2	55.2
Uganda	34,530.2	23.4	32.7	...	...	...	...	...	...	...	...	...	...
Ukraine	1,094.6	29.6	29.6	...	...	29.6	...	...	...	30.6	...	...	...
United Kingdom	1,455.4	72.8	81.3	82.6	82.6	72.8	81.3	...	...	73.9	82.4	84.3	84.3
United States	14,526.6	...	...	...	...	...	...	...	...	86.4	86.6	92.8	94.6
Uruguay	807.7	44.2	44.2	...	...	44.2	...	...	...	44.6	...	...	...

**Source: Government Finance Statistics Yearbook 2010****\*Billions of domestic currency**

GL3 = general government; GL2 = central government; GL1 = budgetary central government. D1 refers to debt securities and loans. D2 includes D1 plus Special Drawing Rights (SDRs) and currency and deposits. D3 includes D2 and other accounts payable, and D4 includes D3 and Insurance, Pension, and Standardized Guarantee Schemes (IPSGS).

**Table 2. Standard Tables of Public Sector Debt**

Table	Instrument	Nominal vs. Market value	Original maturity	Remaining maturity	Net versus gross debt	Currency of denomination	Interest rate	Residence of creditor	Institutional sector of creditor	Debt service payment schedule	Publicly guaranteed debt	Arrears	Financial derivatives	Contingent liabilities
1	X	X	X	X		X	X	X						
2	X		X	X	X	X	X	X						
3	X	X	X											
4		X	X			X								
5		X				X	X							
6a.	X	X						X						
6b.		X						X	X					
6c.		X				X		X						
7	X					X				X				
8	X		X								X			
9												X		
10		X						X	X					
11													X	
12														X
13	X	X	X				X							

Source: *Public Sector Debt Statistics: Guide for Compilers and Users*, Chapter 5 (Washington: International Monetary Fund 2011) <http://www.tffs.org/PSDStoc.htm> (free of charge)

**Table 3. Government Obligations by Degree of Certainty<sup>1</sup>**

Nature of obligation	Obligations with fixed timing and amounts	Obligations with fixed amounts, but uncertain timing	Obligations with estimated timing and amount	Obligations under mutually unexecuted contracts	Constructive obligations	Explicit contingent obligations	Implicit contingent obligations
Example of obligation	Debt instruments; invoiced accounts payable.	Uninvoiced accounts payable; payment in arrears.	Civil service pensions; some guarantees <sup>2</sup> ; decommissioning costs.	Financial and operating leases; payments under PPP contracts.	Social security schemes; medical benefits for retirees.	Some guarantees; government insurance schemes; warranties and indemnities; legal action against government.	Disaster relief; assistance to public enterprises, public financial institutions, and subnational governments; reunification costs.
Accounting treatment <sup>3</sup>	Recognize as liabilities.	Recognize as liabilities.	Recognize as liabilities.	Recognize financial leases as liabilities; disclose commitments under operating leases; PPPs not covered.	Consideration being given to recognizing some social security obligations as liabilities.	Not recognized; disclose as contingent liabilities.	Not covered.
Statistical treatment <sup>4</sup>	Debt instruments.	Debt instruments. Arrears cannot be distinguished separately, need to be reported as memorandum item.	Rights accrued under civil service pension schemes are liabilities; most guarantees are not liabilities; decommissioning costs offset assets.	Financial leases reported as liabilities; commitments under operating leases reported as a memorandum item.	Present value of social security pensions reported as a memorandum item.	Reported as a memorandum item.	Not covered.

1/ Uncertainty increases from left to right.

2/ Guarantees most likely to be called.

3/ Accounting treatment referred in the table is taken from International Accounting Standards and International Public Sector Accounting Standards.

4/ Statistical treatment is taken from *Public Sector Debt Statistics: Guide for Compilers and Users* (Washington: International Monetary Fund 2011)

Source: This table is an adaptation from the private sector framework in Exhibit 9.1 of Stickney and Weil (2000).