

The Debt of Nations (DNA)

Government Debt Composition Around the World 1900-2020

Luis-Diego Barrot

The World Bank Group

NBER-SI International Finance & Macro Data

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**“In God we Trust.
All other must
bring data.”**

- W Edwards Deming

This work should not be reported as representing the views of the World Bank Group or the International Monetary Fund.

The views expressed in this presentation are those of the author and do not necessarily represent the views of the WB and/or IMF, its Executives Boards, or Management.

- 1 Motivation
- 2 Methodology
 - Coverage
- 3 Review of Existing Databases
 - Official databases
 - Analytical databases
 - DNA and IMF-WEO database
 - DNA and IMF-HPDD database
 - DNA and RR database
- 4 Conclusions and Future Work
- 5 Access to the Database

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- There are currently around 50 Debt Databases, including official and analytical sources, and the number continues to grow.
- Everytime the World has a Crisis, some IFIs (IMF, WB, etc.) create new Debt Databases (WB Debt Tables in 1980s, WB QED 1990s, IMF-WB QPSD in 2008).
- Given that number of data sources, anyone could ask:
 - **Why do we need a new database on Government Debt?**

Why do we need a new database on Government Debt?

- Previous to the path-breaking work of **Reinhart & Rogoff (2008, 2009)** and **Panizza et al. (2008, 2010)**, there were very few sources for data on debt composition.
- Despite their importance, these datasets had a few shortcomings.
- For example they lacked:
 - A consistent definition of **Domestic and External debt**, and
 - A clear separation of institutional levels of government (**Public, General, Central, State and Local level**).
 - Furthermore, none of these databases provided information at the State or Local government level, which in recent years has come to the front of the policy debate on debt sustainability.

Why do we need a new database on Government Debt?

The DNA database solves this problem in the following way:

- 1 It was created using a framework that closely follows the UN, IMF, and WB International Standards of Government Statistics evaluating around 50 existing databases on Government Debt.
- 2 The framework sets the foundations for future evaluations and updates of government debt statistics that are methodologically consistent with international standards. This will allow researchers and policy analysts to properly conduct cross country analysis.

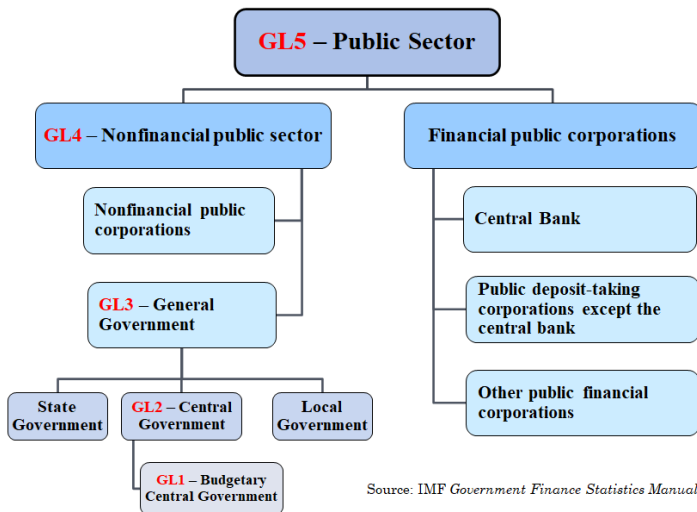
Why do we need a new database on Government Debt?

The DNA database is different from existing databases in three key areas:

- 1 The core of the data comes from official archived data from the IMF's Statistics Department (IFS and GFS), from other International Organizations, and from National Sources that use the same framework.
- 2 The data is disaggregated by institutional units (**General, Central, State and Local government**), and
- 3 The data is also disaggregated by residence of the creditors (**Domestic and External**), offering a truly multidimensional database on gross governments debt.

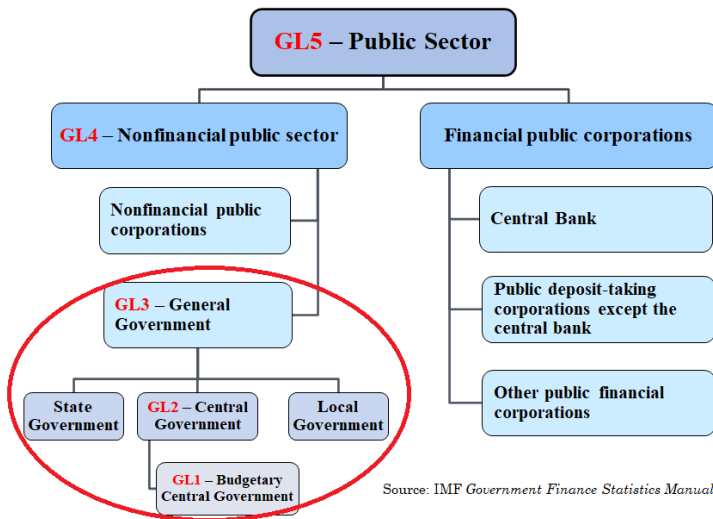
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Coverage: Government Institutional Units



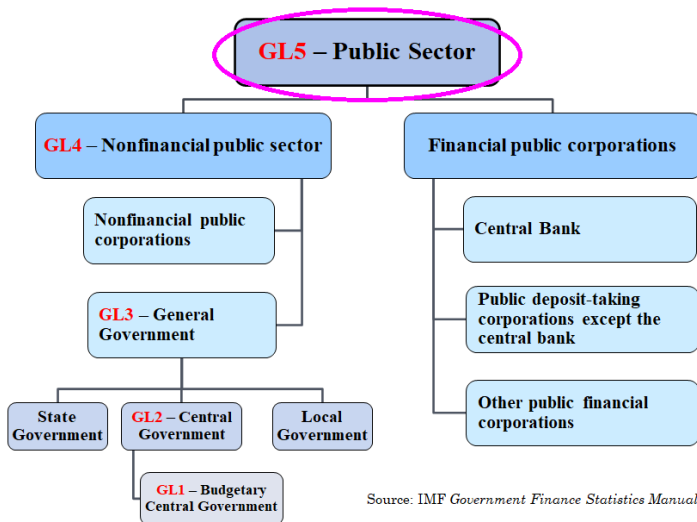
Source: IMF *Government Finance Statistics Manual 2014*

Coverage: Government Institutional Units



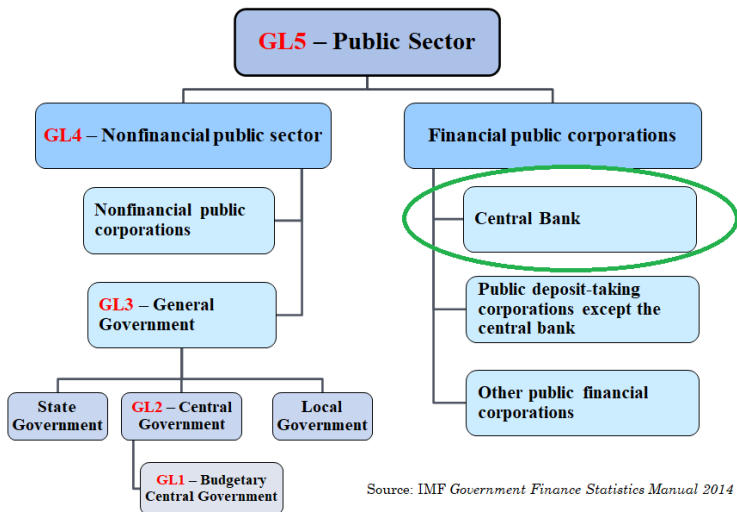
Source: IMF *Government Finance Statistics Manual 2014*

Coverage: Government Institutional Units



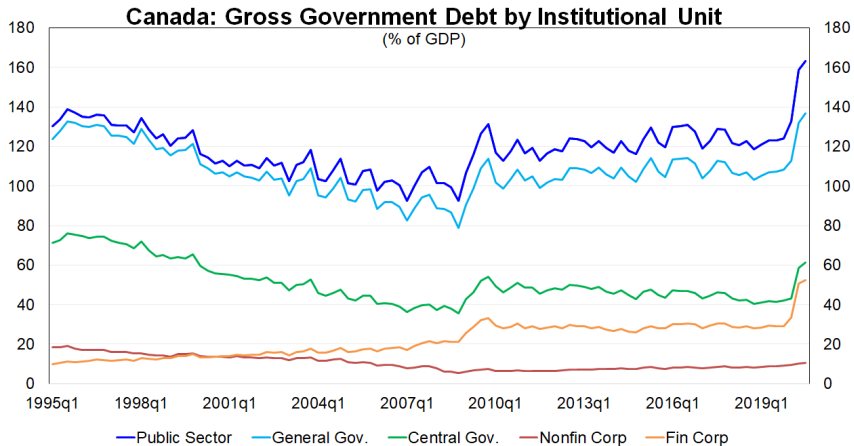
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Coverage: Government Institutional Units



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Coverage: Government Institutional Units



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Official Debt Databases: Definitions and Composition

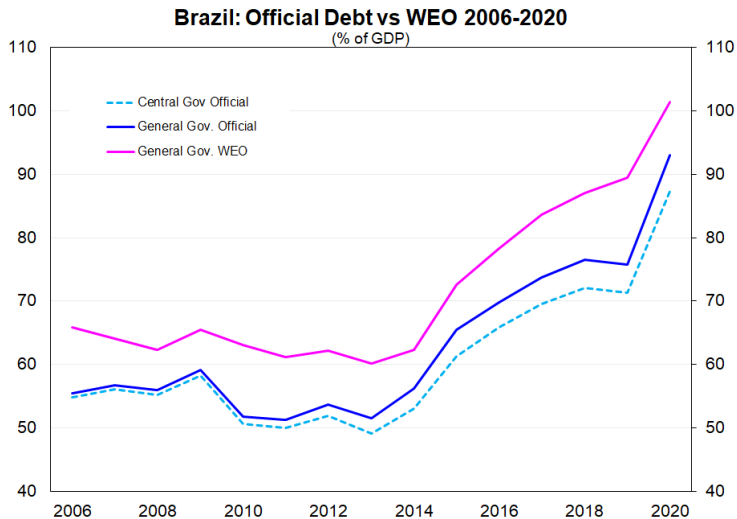
Year	Database	Range	Countries	Institutional Level					Residence of the Creditor			Notes
				PS	GG	CG	SG & LG	Clear Definition	Domestic	External	Clear Definition	
2021	WB-IDS International Debt Statistics	1970-2019	133	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Clear definition
2012	WB-QPS Quarterly Public Sector Debt	1995q1-2020q4	102	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Clear definition
2006	WB-JEDH Joint External Debt Hub	1990q1-2020q4	249	Yes	No	No	No	Yes	No	Yes	Yes	Only External
2005	WB-GDF Global Development Finance	1970-2013	203	Yes	No	No	No	Yes	No	Yes	Yes	Only External
2004	WB-QED-GDDS Quarterly External Debt Statistics/GDDS	2002q4-2020q4	58	No	Yes	No	No	Yes	No	Yes	Yes	Only External
2004	WB-QED-SDSS Quarterly External Debt Statistics/SDSS	1998q1-2020q4	124	Yes	No	No	No	Yes	No	Yes	Yes	Only External
2010	OECD-IV African Central Government Debt	2000-2012	17	No	No	Yes	No	Yes	Yes	Yes	Yes	Clear definition
2000	OECD-III Financial Balance Sheets	1995-2019	33	No	Yes	Yes	Yes	Yes	No	No	Yes	Only Total Debt
2000	OECD-II Quarterly Public Sector Debt	1995q1-2020q3	34	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Clear definition
2000	OECD-I Central Government Debt	1980-2010	34	No	No	Yes	No	Yes	Yes	Yes	Yes	Clear definition
1999	EU-ECB Government Finance Statistics	1995-2020	27	No	No	Yes	No	Yes	No	No	Yes	Only Total Debt
1998	UN-ECLAC UN Economic Commission for LAC (ECLAC)	1980-2019	19	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Clear definition
1995	EUROSTAT Government Finance Statistics	1995-2019	32	No	Yes	Yes	Yes	Yes	No	No	Yes	Only Total Debt
1986	IMF-GFSY Government Finance Statistics Database	1970-2019	125	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Clear definition
1976	UN-III United Nations - UNCTAD	1970-2010	238	Yes	No	No	No	Yes	No	Yes	Yes	Only External
1951	WB-DT World Bank Debt Tables	1970-2013	190	No	No	Yes	No	Yes	No	Yes	Yes	Only External
1948	IMF-IFS International Financial Statistics	1948-2019	123	No	No	Yes	No	Yes	Yes	Yes	Yes	Clear definition
1945	UN-II United Nations	1946-1980	52	No	No	Yes	No	Yes	Yes	Yes	Yes	Clear definition
1914	UN-I League of Nations	1914-1946	52	No	No	Yes	No	Yes	Yes	Yes	Yes	Clear definition

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Analytical debt databases

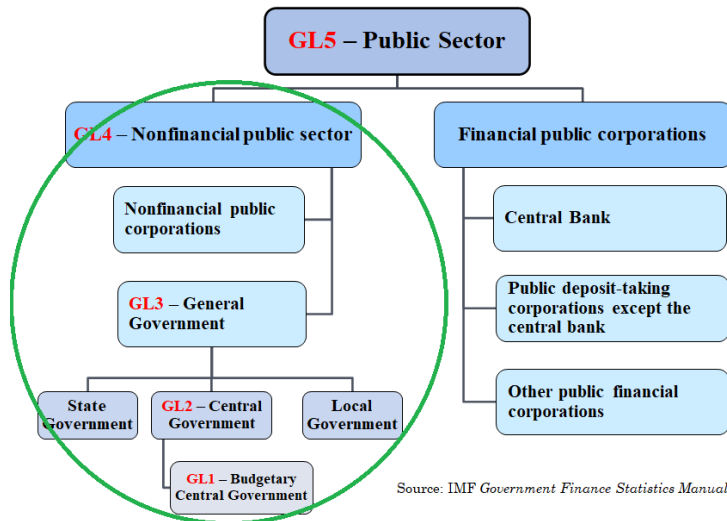
Analytical Debt Databases: Definitions and Composition

Year	Authors and Description	Range	Countries	Institutional Level					Residence of the Creditor			Notes
				PS	GG	CG	SG & LG	Clear Definition	Domestic	External	Clear Definition	
2021	<i>Barrot - Debt of Nations Database</i>	1900-2020	130	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Clear definition
2018	<i>Mbaye, Moreno-Badía, & Choe - Global Debt Database</i>	1950-2019	190	No	Yes	Yes	No	No	No	No	No	Only Total Debt
2014	<i>Abbas, Belhocine, El-Gamainy & Horton - Sovereign Debt Composition</i>	1900-2011	13	No	No	Yes	No	Yes	Yes	Yes	Yes	Clear definition
2014	<i>Arslanalp & Tsuda - Emerging Market Sovereign Debt Dataset</i>	2004-2020q3	24-87	No	Yes	No	No	Yes	Yes	Yes	Yes	Clear definition
2014	<i>Piketty & Zucman - Capital is Back, Wealth-Income Database</i>	2001-2008	6	Yes	Yes	Yes	Yes	Yes	No	No	No	Only Total Liabilities
2013	<i>Craucis & Sandleris - HIDD: Historical IDB Debt Dataset</i>	1980-2006	31	No	No	Yes	No	No	Yes	Yes	No	by Jurisdiction
2013	<i>Bua, Pradelli & Presbitero - Domestic Debt in LICs Database</i>	1970-2011	40	No	No	Yes	No	Yes	Yes	No	Yes	Clear definition
2013	<i>Zucman - The Missing Wealth Of Nations</i>	2001-2008	70	Yes	No	No	No	No	No	Yes	Yes	Only Total External Liabilities
2012	<i>Merlier & Pisani-Ferry - Debt Database</i>	1990-2019	12	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Clear definition
2012	<i>Arslanalp & Tsuda - Sovereign Investor Base Dataset</i>	2004-2020q4	24-33	No	Yes	No	No	Yes	Yes	Yes	Yes	Clear definition
2012	<i>Mauro, Romeu, Binder & Zaman - Public Finances in Modern History Database</i>	1800-2011	56	No	Yes	Yes	No	Yes	No	No	No	Only Total Debt
2011	<i>Presbitero - Domestic Debt in LICs Database</i>	1970-2010	40	No	Yes	Yes	No	No	Yes	No	No	Different definitions
2011	<i>Cecchetti, Mohanty & Zampolli - Debt Database</i>	1980-2009	18	No	Yes	No	No	No	No	No	No	Only Total Debt
2010	<i>Lane & Milesi-Ferretti - External Wealth of Nations Mark II</i>	1970-2011	145	Yes	No	No	No	No	No	Yes	Yes	Only Total External Liabilities
2010	<i>Abbas, Belhocine, El-Gamainy & Horton - Historical Public Debt Database</i>	1692-2025	175	No	Yes	No	No	No	No	No	No	Only Total Debt
2008	<i>Reinhart & Rogoff - Domestic and External Debt database</i>	1960-2012	64	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Clear definition
2008	<i>Reinhart & Rogoff - Debt database</i>	1796-2010	71	No	Yes	Yes	No	Yes	No	No	No	Only Total Debt
2008	<i>Pantizza - Domestic and External Public Debt Database</i>	1970-2008	130	No	No	Yes	No	No	Yes	Yes	No	Different definitions
2007	<i>Abbas & Christensen - Domestic Debt Database</i>	1970-2007	144	No	No	Yes	No	No	Yes	Yes	No	Banks holdings
2006	<i>Jainovich & Pantizza - Domestic and External Public Debt Database</i>	1970-2005	141	No	Yes	Yes	No	No	Yes	Yes	No	Different definitions
2006	<i>Cowan, Levy-Yeyati, Pantizza & Sturzenegger - HIDD: Historical IDB Debt Dataset</i>	1980-2004	31	No	No	Yes	No	No	No	Yes	No	by Jurisdiction
2006	<i>Jeanne & Gasolina - Domestic and External Debt Database</i>	1980-2005	19	No	No	Yes	No	No	No	No	No	by currency
2005	<i>Christensen - Domestic Debt Database</i>	1980-2000	27	No	No	Yes	No	Yes	No	Yes	Yes	Clear definition
2001	<i>Lane & Milesi-Ferretti - External Wealth of Nations Mark I</i>	1970-2008	67	Yes	No	No	No	No	No	Yes	Yes	Only Total External Liabilities
1996	<i>OECD Economic Outlook - General Government Debt</i>	1980-2013	31	No	Yes	No	No	No	No	No	No	Only Total Debt
1995	<i>EU-AMECO - General Government Debt</i>	1970-2012	37	No	Yes	Yes	Yes	Yes	Yes	No	No	Only Total Debt
1990	<i>World Economic Outlook - General Government Debt</i>	1990-2025	47-175	No	Yes	Yes	No	No	No	No	No	Only Total Debt

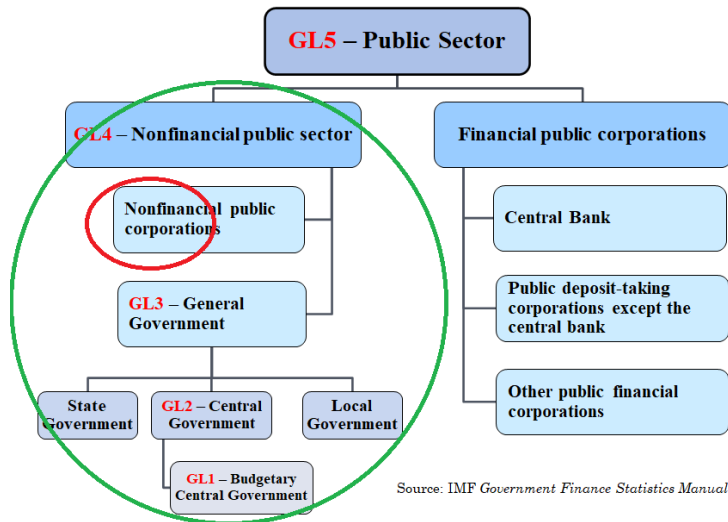


WEO April 2021:

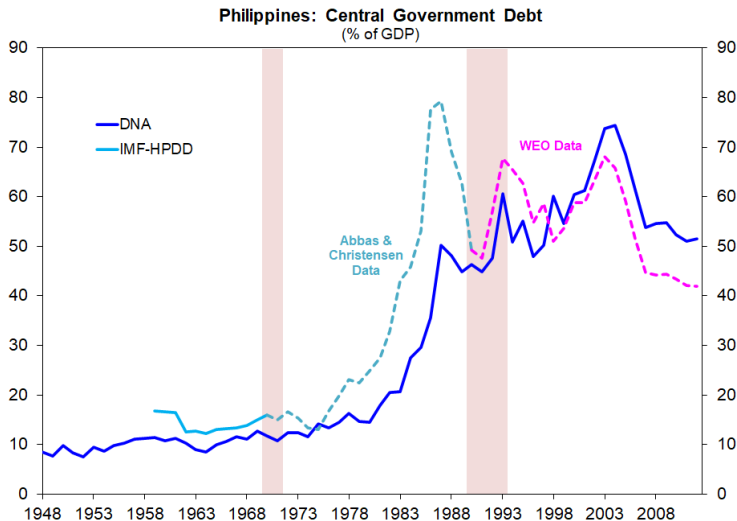
“Source: Ministry of Finance or Treasury, Latest actual data: 2020, Notes: **General Government (GG) data refers to the non-financial public sector, which includes the federal, state and local governments as well as public enterprises (excluding Petrobras and Eletrobras) and is consolidated with the Sovereign Wealth Fund (SWF)....**”

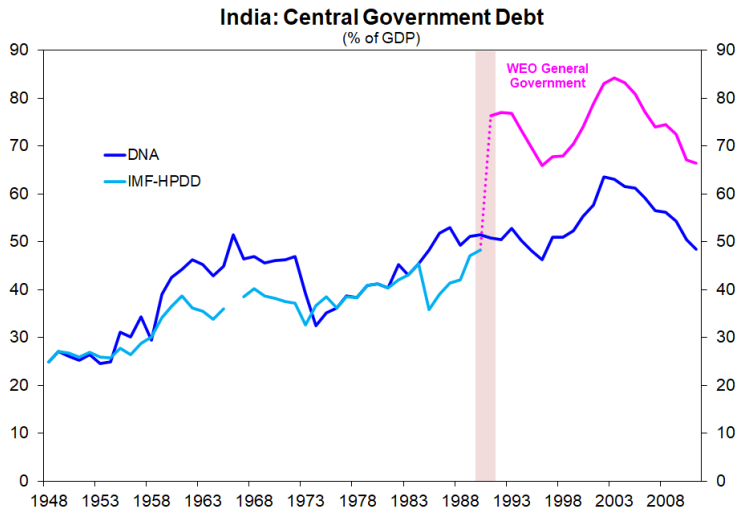


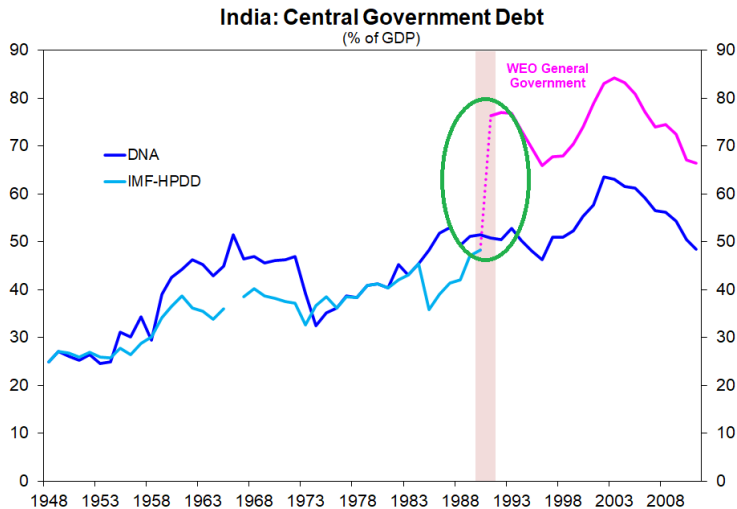
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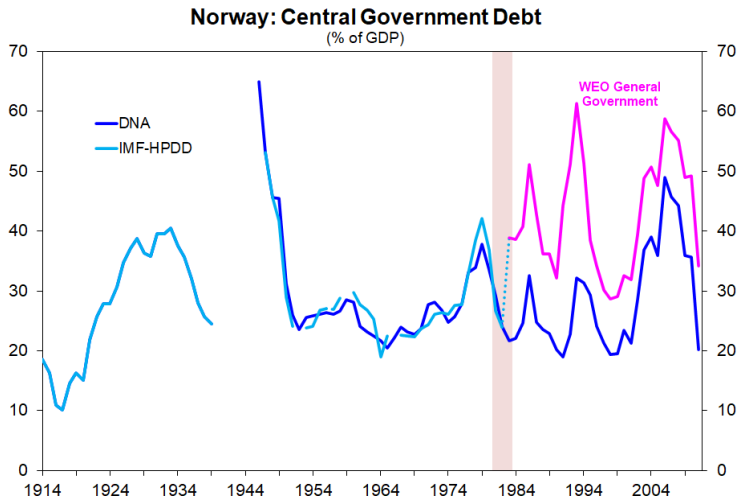


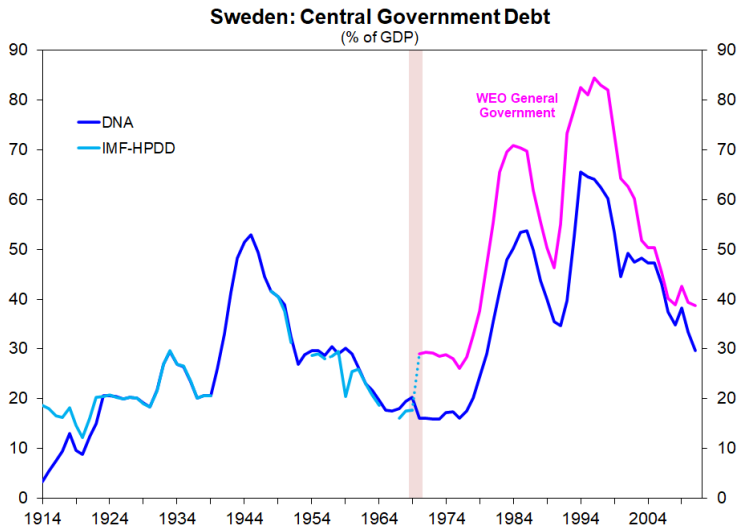
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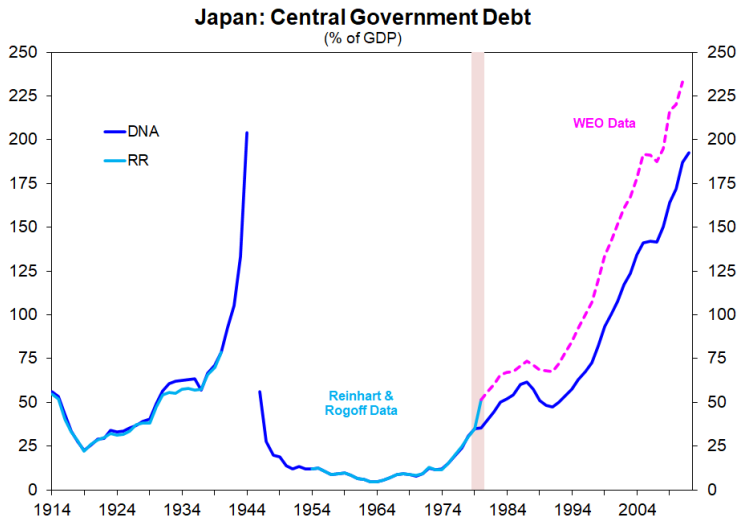












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This database advances the current knowledge in several ways:

- 1 It provides a framework to incorporate more countries and data in the future.
- 2 It is the first database that provides a multidimensional framework:
 - 1 A total of 130 countries, over the period 1900-2020 for 60 advanced and emerging countries, and over 1960-2020 for other emerging and developing countries
 - 2 Institutional coverage: General, Central, State and Local Governments (60 countries), and
 - 3 Residence of Creditors: Domestic and External debt (full sample of 130 countries)

- 1 Explore formally the links between debt composition and:
 - 1 Growth;
 - 2 Debt Intolerance and/or Original Sin;
 - 3 Interest rates, inflation and other macroeconomic variables.
- 2 Model Calibration
- 3 In-depth analysis of certain episodes, e.g., Great Depression, post WW-II, pre- and post-crisis episodes (like 1980s Debt Crisis), and current crisis.

The current version of the DNA database **does not include:**

- 1 Debt Composition by Currency;
- 2 Debt Composition by Instruments;
- 3 Debt Maturity;
- 4 Measures of Arrears and/or Implicit Liabilities (à la Kotlikoff).

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Access to the Database

- The WP and the Database will be available soon at:
<https://sites.google.com/view/diegobarrot>
- All background material used to create the database (**around 1,100 files**) will also be publicly available
- A link is also posted at the NBER Catalogue of Data Sources
- Email: lbarrot@gmail.com / lbarrotaraya@worldbank.org
- Twitter: [@diegobarrot](https://twitter.com/diegobarrot)

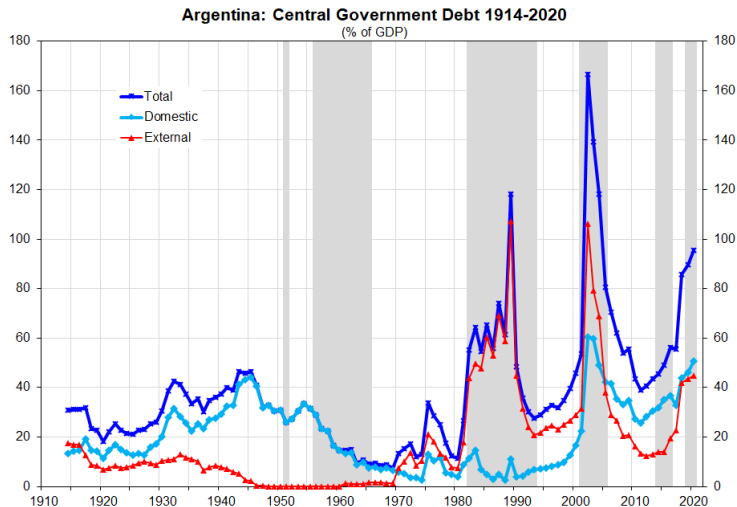


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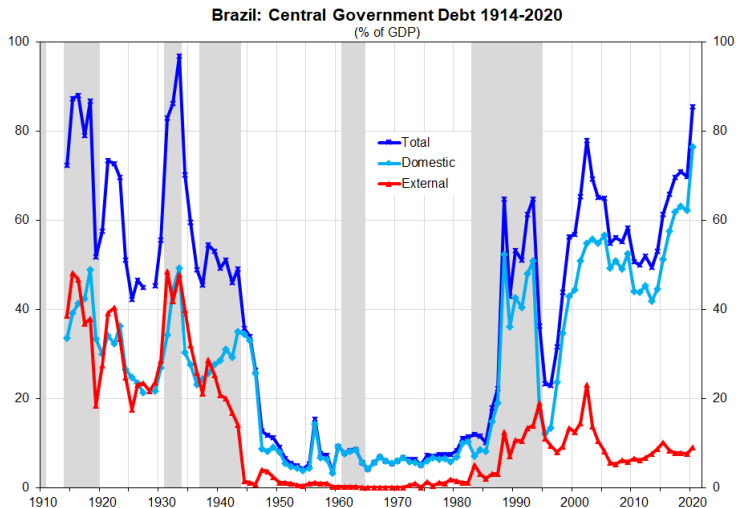
References

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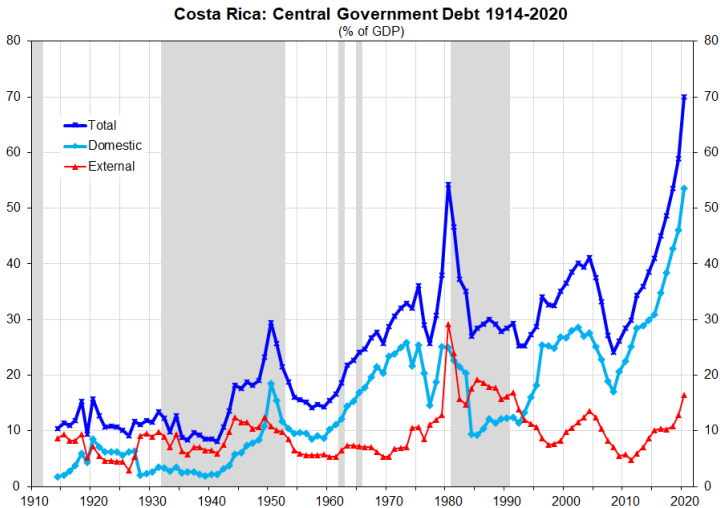
Appendix: example of data



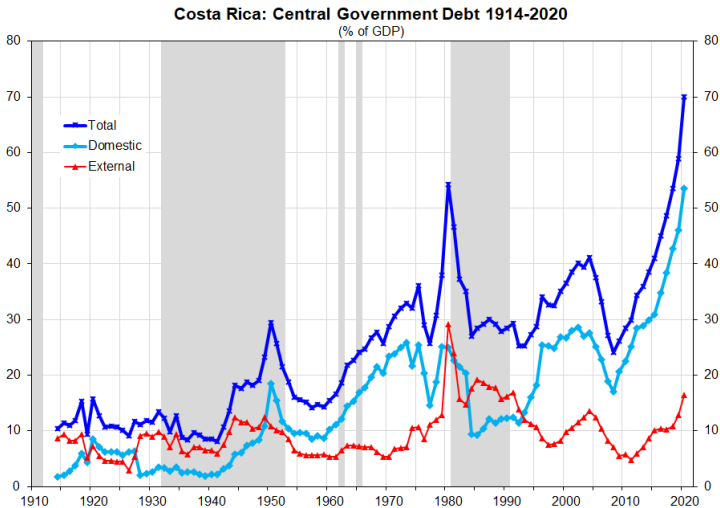
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