Electronic Chartbook¹

"A Modern History of Fiscal Prudence and Profligacy"



January 2013 International Monetary Fund Paolo Mauro, Rafael Romeu, Ariel Binder, Asad Zaman

¹ This Electronic Chartbook accompanies the IMF Working Paper "A Modern History of Fiscal Prudence and Profligacy", by Paolo Mauro, Rafael Romeu, Ariel Binder and Asad Zaman. The authors are solely responsible for its content.

This electronic chartbook provides background, country-specific information that underlies and complements the main results presented in the working paper. Each country page reports: (a) basic statistics stable on the primary balance and the government debt as a ratio to GDP (minimum, maximum, median, 5th percentile and 95th percentile); (b) a line chart of the primary balance and the government debt as a ratio to GDP for the sample period for which data are available, alongside the primary balance that would have been required at each point in time to stabilize the government debt-to-GDP ratio; (c) graphs of the Bohn regression coefficient and corresponding p-values for rolling 25-year windows; and (d) a summary of the search for "influentially prudent" and "influentially profligate" years as explained in the body of the working paper—an intermediate input in further calculations. None of these elements alone provides a full picture of a country's degree of fiscal prudence or profligacy. The reader is referred to the working paper for explanation of the various methodologies, and a possible summary of the results of the various approaches (Table 13 of the working paper). Appendix tables reporting bibliographical and coverage information for all data sources used; the data source used for each variable and year within each country's history; and the splicing decision tree each appear after the country pages.

Country Coverage

	Country	Coverage	Page Number
	Canada	1870-2011	4
	France	1880-1913, 1925-1937, 1946-2011	5
	Germany	1880-1913, 1925-1934, 1950-2011	6
G7	Italy	1862-2011	7
	Japan	1875-1943, 1947-2011	8
	United Kingdom	1830-2011	9
	United States	1800-2011	10
	Australia	1913-2011	11
	Austria	1880-1912, 1924-1937, 1948-2011	12
	Belgium	1880-1913, 1933-1939, 1950-2011	13
	Denmark	1880-1945, 1954-2011	14
	Finland	1918-1945, 1948-2011	15
	Greece	1880-1913, 1927-1939, 1948-2011	16
	Iceland	1946-2011	17
<u></u>	Ireland	1938-2011	18
Other	Israel	1954-1970, 1980-2011	19
Auvanceu	Korea	1958-2011	20
	Netherlands	1880-1939, 1949-2011	21
	New Zealand	1913-1944, 1947-2011	22
	Norway	1880-1939, 1946-2011	23
	Portugal	1880-1913, 1919-2011	24
	Spain	1850-1935, 1940-2011	25
	Sweden	1800-2011	26
	Switzerland	1899-1913, 1929-2011	27
	Argentina	1864-2011	28
	Bolivia	1955-2011	29
	Brazil	1880-1913, 1965-1986, 1995-2011	30
	Bulgaria	1929-1940, 1995-2011	31
	Chile	1940-1943, 1977-2011	32
	China	1987-2011	33
	Colombia	1923-2011	34
	Costa Rica	1956-2011	35
	Dominican Republic	1980-2011	36
	Ghana	1962-2011	37
	Haiti	1924-1929, 1931-1937, 1939-1941, 1945-1949, 2000-2011	38
	Honduras	1952-2011	39
	Hungary	1928-1941, 1984-2011	40
	India	1861-1891, 1913-2011	41
Non-	Indonesia	1972-2011	42
Advanced	Iran	1962-1965, 1980-2011	43
	Mexico	1917-2011	44
	Pakistan	1951-1967, 1971-2011	45
	Panama	1956-1977, 1982-2011	46
	Paraguay	1967-2011	47
	Peru	1970-2011	48
	Philippines	1954-2011	49
	Poland	1984-2011	50
	Romania	1980-2011	51
	Russia	1880-1907,1928-1931, 1933, 1998-2011	52
	South Africa	1913-1976, 1980-2011	53
	Thailand	1957-2011	54
	Turkey	1970-2011	55
	Uruguay	1972-2011	56
	Venezuela	1921-1937 1949-1979 1988-2011	57

Note: Each subsequent country page includes a small table reporting the minimum, maximum, median, 5th percentile, and 95th percentile of the debt-to-GDP and primary balance-to-GDP ratios for the country in question over the period for which data are available.

Canada	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	18 (1912)	21	58	103	154 (1946)
Primary Fiscal Balance	-7.2 (1918)	-3.2	1.3	7.2	10.1 (2000)



Notes: The summary table excludes war and default years (subject to their availability). The debt-stabilizing primary balance is computed as $s_t=d_{t-1}(r_t-g_t)/(1+g_t)$, where r-g is the interest-rate growth differential. We use time t through t+4 averages of r and g in the forward-looking specification presented in the first chart. In the second chart, the value of the blue line in the year 1974 is equal to the debt response coefficient given by the estimate of the Bohn fiscal reaction function over the 25 year period 1950-1974. The value of the red line (right scale) in 1974 is equal to the significance of this estimated debt coefficient. Whenever the blue line is above 0 and the red line is below .05, the debt coefficient for the corresponding 25 year window is positive and significant at the 5 percent level, and hence fiscal policy satisfies the government's intertemporal budget constraint in accordance with Bohn (1998). Dotted lines (where present, in the middle panel) indicate the presence of a war or default episode in the corresponding 25 year window. The bottom chart presents results from the structural break and influential observations tests, performed over the full sample for each country and excluding war and default years.

4

France	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	14 (1969)	16	64	178	237 (1921)
Primary Fiscal Balance	-8.2 (1948)	-5.6	0.7	4.0	5.7 (1929)



Germany	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	10 (1927)	13	39	68	83 (2010)
Primary Fiscal Balance	-6.0 (1995)	-1.7	1.0	2.8	4.3 (2000)





Italy	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	24 (1947)	29	90	123	160 (1920)
Primary Fiscal Balance	-7.4 (1975)	-4.7	1.3	4.9	6.5 (1997)



Japan	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (1964)	7	36	190	233 (2011)
Primary Fiscal Balance	-7.7 (2009)	-4.2	0.6	3.6	5.5 (1990)





United Kingdom	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	28 (1913)	36	89	229	261 (1821)
Primary Fiscal Balance	-9.5 (2009)	-2.3	2.5	9.9	11.4 (1923)



United States	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	0 (1835)	1	18	72	100 (2011)
Primary Fiscal Balance	-9.0 (2009)	-3.2	0.3	2.8	6.6 (1948)





Australia	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	9 (1861)	12	32	78	98 (1932)
Primary Fiscal Balance	-4.7 (1917)	-4.2	0.3	3.8	6.2 (1960)



Notes: The summary table excludes war and default years (subject to their availability). The debt-stabilizing primary balance is computed as $s_t=d_{t-1}(r_t-g_t)/(1+g_t)$, where r-g is the interest-rate growth differential. We use time t through t+4 averages of r and g in the forward-looking specification presented in the first chart. In the second chart, the value of the blue line in the year 1974 is equal to the debt response coefficient given by the estimate of the Bohn fiscal reaction function over the 25 year period 1950-1974. The value of the red line (right scale) in 1974 is equal to the significance of this estimated debt coefficient. Whenever the blue line is above 0 and the red line is below .05, the debt coefficient for the corresponding 25 year window is positive and significant at the 5 percent level, and hence fiscal policy satisfies the government's intertemporal budget constraint in accordance with Bohn (1998). Dotted lines (where present, in the middle panel) indicate the presence of a war or default episode in the corresponding 25 year window. The bottom chart presents results from the structural break and influential observations tests, performed over the full sample for each country and excluding war and default years.

11

Austria	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	8 (1957)	14	60	86	90 (1892)
Primary Fiscal Balance	10.3 (1931)	-5.9	0.8	3.2	3.8 (1897)





Belgium	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	9 (1837)	15	55	127	134 (1993)
Primary Fiscal Balance	-7.4 (1981)	-3.1	1.4	6.0	9.8 (1927)



Denmark	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (1975)	8	19	67	80 (1993)
Primary Fiscal Balance	-3.8 (1928)	-1.6	0.9	7.0	11.6 (1986)





Finland	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	3 (1974)	4	13	55	58 (1994)
Primary Fiscal Balance	-3.9 (1993)	-2.6	0.5	7.5	9.6 (2000)



Greece	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	17 (1965)	22	89	196	218 (1900)
Primary Fiscal Balance	-14.7 (1929)	-9.4	-1.3	5.9	6.3 (1900)





Iceland	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	2 (1908)	4	17	58	101 (2011)
Primary Fiscal Balance	-3.4 (2009)	-2.4	1.2	6.4	8.5 (2006)



Notes: The summary table excludes war and default years (subject to their availability). The debt-stabilizing primary balance is computed as $s_t=d_{t-1}(r_t-g_t)/(1+g_t)$, where r-g is the interest-rate growth differential. We use time t through t+4 averages of r and g in the forward-looking specification presented in the first chart. In the second chart, the value of the blue line in the year 1974 is equal to the debt response coefficient given by the estimate of the Bohn fiscal reaction function over the 25 year period 1950-1974. The value of the red line (right scale) in 1974 is equal to the significance of this estimated debt coefficient. Whenever the blue line is above 0 and the red line is below .05, the debt coefficient for the corresponding 25 year window is positive and significant at the 5 percent level, and hence fiscal policy satisfies the government's intertemporal budget constraint in accordance with Bohn (1998). Dotted lines (where present, in the middle panel) indicate the presence of a war or default episode in the corresponding 25 year window. The bottom chart presents results from the structural break and influential observations tests, performed over the full sample for each country and excluding war and default years.

17

Ireland	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	15 (1929)	25	45	108	109 (2011)
Primary Fiscal Balance	28.2 (2010)	-6.8	-0.5	5.1	6.7 (2000)



Notes: The summary table excludes war and default years (subject to their availability). The debt-stabilizing primary balance is computed as $s_t=d_{t-1}(r_t-g_t)/(1+g_t)$, where r-g is the interest-rate growth differential. We use time t through t+4 averages of r and g in the forward-looking specification presented in the first chart. In the second chart, the value of the blue line in the year 1974 is equal to the debt response coefficient given by the estimate of the Bohn fiscal reaction function over the 25 year period 1950-1974. The value of the red line (right scale) in 1974 is equal to the significance of this estimated debt coefficient. Whenever the blue line is above 0 and the red line is below .05, the debt coefficient for the corresponding 25 year window is positive and significant at the 5 percent level, and hence fiscal policy satisfies the government's intertemporal budget constraint in accordance with Bohn (1998). Dotted lines (where present, in the middle panel) indicate the presence of a war or default episode in the corresponding 25 year window. The bottom chart presents results from the structural break and influential observations tests, performed over the full sample for each country and excluding war and default years.

18

Israel	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	62(1973)	62	98	233	284(1984)
Primary Fiscal Balance	-13.0(1970)	-10.5	-0.2	6.2	6.9(1986)



Korea	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	3 (1969)	3	16	32	34 (2009)
Primary Fiscal Balance	10.5 (1955)	-9.9	1.5	3.9	5.5 (2000)





Netherlands	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	38 (1977)	45	87	223	247 (1834)
Primary Fiscal Balance	-3.6 (1995)	-1.7	1.4	3.9	5.6 (2000)



New Zealand	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Governm ent Debt	6 (1863)	20	84	165	226 (1933)
Primary Fiscal Balance	-4.6 (2011)	-2.3	2.6	5.7	7.5 (1995)





Norway	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	12 (1916)	16	28	55	65 (1946)
Primary Fiscal Balance	-3.5 (1947)	-0.9	3.1	14.6	20.6 (2008)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

Portugal	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	14 (1974)	16	49	66	106 (2011)
Primary Fiscal Balance	-9.1 (1976)	-6.8	0.2	2.2	3.5 (1992)



Spain	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	8 (1976)	12	59	124	169 (1876)
Primary Fiscal Balance	-9.4 (2009)	-3.8	1.3	4.1	6.4 (1899)



Sweden	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	2 (1966)	2	18	57	73 (1996)
Primary Fiscal Balance	-8.1 (1809)	-2.9	0.1	4.0	13.5 (1803)



Switzerland	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	3 (1907)	3	36	68	75 (1946)
Primary Fiscal Balance	-3.9 (1939)	-0.8	0.6	3.0	3.4 (2008)





Argentina	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	6 (1864)	11	24	61	76 (2006)
Primary Fiscal Balance	-6.3 (1898)	-3.2	0.1	3.6	5.1 (1974)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

Bolivia	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	11 (1953)	19	65	166	205 (1985)
Primary Fiscal Balance	-9.3 (1977)	-8.5	-2.7	6.2	7.0 (2006)



Brazil	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	6 (1952)	10	39	107	121 (1884)
Primary Fiscal Balance	-1.4 (1930)	-1.0	2.5	7.7	8.6 (1887)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

30

Bulgaria	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	11(1924)	14	41	172	290(1993)
Primary Fiscal Balance	-5.1(1929)	-4.0	2.1	8.3	9.4(1996)



Chile	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (2007)	6	20	33	44 (1991)
Primary Fiscal Balance	-3.8 (2009)	-2.5	2.7	8.8	9.0 (2007)



China	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	1 (1984)	2	9	31	34 (2010)
Primary Fiscal Balance	-3.0 (1999)	-3.0	-1.7	1.0	1.3 (2007)





Colombia	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	3 (1926)	5	12	39	46 (2003)
Primary Fiscal Balance	-3.7 (1999)	-2.5	0.3	3.0	3.5 (2008)



Costa Rica	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	15 (1958)	16	31	69	144 (1982)
Primary Fiscal Balance	-4.5 (1979)	-4.0	0.3	3.3	3.7 (2007)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

Dominican Republic	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (1955)	4	18	36	37 (2003)
Primary Fiscal Balance	-2.2 (2003)	-2.2	-0.8	2.4	2.4 (2007)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

Ghana	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	6 (1981)	8	32	100	123 (2000)
Primary Fiscal Balance	-9.1 (1981)	-6.4	-2.6	0.6	0.9 (1971)





Haiti	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	2 (1949)	3	34	160	195 (1992)
Primary Fiscal Balance	-3.6 (2009)	-3.6	0.1	1.4	2.7 (2010)





Honduras	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	2 (1952)	2	10	33	41 (1980)
Primary Fiscal Balance	-2.9 (1953)	-2.9	-1.0	0.5	0.6 (1965)



Hungary	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	23 (1929)	24	72	120	128 (1991)
Primary Fiscal Balance	-5.5 (2006)	-5.2	0.1	6.2	6.5 (1990)





India	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	11 (1867)	13	30	78	84 (2003)
Primary Fiscal Balance	-6.3 (1986)	-4.8	-0.4	1.6	2.3 (1932)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

41

Indonesia	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	16 (1981)	17	37	63	80 (2001)
Primary Fiscal Balance	-2.4 (1976)	-2.2	1.0	3.5	3.8 (1990)





Iran	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	7(1974)	6	18	51	60(1988)
Primary Fiscal Balance	-4.9(1981)	-4.3	0.9	10.8	18.2(2000)



Mexico	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (1959)	4	19	47	57 (1995)
Primary Fiscal Balance	-2.1 (2009)	-1.7	0.8	4.2	5.2 (1991)



Pakistan	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	12(1951)	16	56	83	91(1972)
Primary Fiscal Balance	-9.9(1978)	-7.7	-2.1	2.1	4.1(2003)



Notes: The summary table excludes war and default years (subject to their availability). The debt-stabilizing primary balance is computed as $s_t=d_{t-1}(r_t-g_t)/(1+g_t)$, where r-g is the interest-rate growth differential. We use time t through t+4 averages of r and g in the forward-looking specification presented in the first chart. In the second chart, the value of the blue line in the year 1974 is equal to the debt response coefficient given by the estimate of the Bohn fiscal reaction function over the 25 year period 1950-1974. The value of the red line (right scale) in 1974 is equal to the significance of this estimated debt coefficient. Whenever the blue line is above 0 and the red line is below .05, the debt coefficient for the corresponding 25 year window is positive and significant at the 5 percent level, and hence fiscal policy satisfies the government's intertemporal budget constraint in accordance with Bohn (1998). Dotted lines (where present, in the middle panel) indicate the presence of a war or default episode in the corresponding 25 year window. The bottom chart presents results from the structural break and influential observations tests, performed over the full sample for each country and excluding war and default years.

45

Panama	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	9 (1947)	10	39	105	113 (1990)
Primary Fiscal Balance	-7.0 (1970)	-6.5	0.5	6.4	16.4 (1994)



Notes: The summary table excludes war and default years (subject to their availability). The debt-stabilizing primary balance is computed as $s_t=d_{t-1}(r_t-g_t)/(1+g_t)$, where r-g is the interest-rate growth differential. We use time t through t+4 averages of r and g in the forward-looking specification presented in the first chart. In the second chart, the value of the blue line in the year 1974 is equal to the debt response coefficient given by the estimate of the Bohn fiscal reaction function over the 25 year period 1950-1974. The value of the red line (right scale) in 1974 is equal to the significance of this estimated debt coefficient. Whenever the blue line is above 0 and the red line is below .05, the debt coefficient for the corresponding 25 year window is positive and significant at the 5 percent level, and hence fiscal policy satisfies the government's intertemporal budget constraint in accordance with Bohn (1998). Dotted lines (where present, in the middle panel) indicate the presence of a war or default episode in the corresponding 25 year window. The bottom chart presents results from the structural break and influential observations tests, performed over the full sample for each country and excluding war and default years.

46

Paraguay	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	13 (1974)	10	21	68	73 (2002
Primary Fiscal Balance	-3.3 (2000)	-2.9	0.1	3.7	5.7(1990)



Peru	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (1921)	6	15	45	56 (1983)
Primary Fiscal Balance	-5.0 (1973)	-4.9	0.3	4.6	5.0 (2007)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

Philippines	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	12(1973)	13	41	69	79(1987)
Primary Fiscal Balance	-2.4(1969)	-1.3	1.0	4.3	6.3(1974)





Poland	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	37 (2000)	37	46	56	56 (2011)
Primary Fiscal Balance	-5.2 (2010)	-5.2	-1.3	1.3	1.3 (1995)





Romania	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	1 (1990)	1	15	34	34 (2011)
Primary Fiscal Balance	-7.5 (2009)	-6.8	-0.1	8.5	8.8 (1988)



Russia	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	8 (2008)	9	56	84	87 (1881)
Primary Fiscal Balance	-5.7 (2009)	-5.5	2.9	9.1	9.1 (2005)





South Africa	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	23 (1984)	28	46	102	128 (1932)
Primary Fiscal Balance	-5.7 (1949)	-3.4	-1.0	3.6	4.3 (1999)



Thailand	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	4 (1996)	5	18	53	57 (2001)
Primary Fiscal Balance	-5.3 (2002)	-4.2	-0.6	3.6	7.5 (1993)



Sources: IMF Staff Calculations based on various data sources (see appendix below)

Turkey	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	15 (1957)	18	33	60	74 (2002)
Primary Fiscal Balance	-4.6 (1977)	-3.2	0.6	11.7	13.6 (2000)





Venezuela	Min (Year)	5th Pct	Median	95th Pct	Max (Year)
Government Debt	0 (1941)	0	7	65	72 (1994)
Primary Fiscal Balance	-6.7 (2009)	-4.9	0.5	5.2	7.5 (2000)



Appendix Table 1. Data Sources

Data Source	Reference	Country Coverage	Period	Concepts
AMECO Database (AMECO)	"EUROPA - Economic and Financial Affairs - Indicators -AMECO Database." EUROPA. Web. 07 Mar. 2012. <http: ameco="" ec.europa.eu="" economy_finance="" s<br="" user="">erie/SelectSerie.cfm>.</http:>	European Union (27 countries); United States, Canada, Japan	1970-2013	Revenue, Expenditure, Interest Expenditure ,Gross Public Debt
Abbas and Christensen (AC)	Abbas, S.M. A. and J. E. Christensen (2010). "The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-Income Countries and Emerging Markets", IMF Staff Papers.	144 Developing and Emerging Countries	1970-2007	Central Government Domestic Debt/GDP
CLYPS	Cowan K., Levy-Yeyati E., Panizza U. and Sturzenegger F. (2006). Sovereign debt in the Americas: new data and stylized facts, RES Working Paper No. 577, Inter-American Development Bank, Research Department, Washington, DC, United States.	Argentina, Bahamas, Belize, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, New Zealand, Nicaragua, Pakistan, Panama, Paraguay, Peru, South Africa, Trinidad and Tobago, United States, Uruguay, Venezuela (29 Countries).	1980-2005	Gross Central Government Debt
Flandreau and Zumer (FZ)	Flandreau M. and F. Zumer (2004). The Making of Global Finance 1880-1913. Development Centre Studies, OECD.	United States, United Kingdom, Austria, Denmark, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, Greece, Portugal, Spain, Argentina, Brazil, Colombia, Russia	1880-1913	Revenue, Expenditure, Interest Expenditure,
International Financial Statistics (IFS)	International Financial Statistics (1950, 1956, 1960, 1966, 1970, 1975, 1980, 1995, 2000)	IMF Member Countries (187 Countries).	1940-1996	Revenue, Expenditure, Interest Expenditure,
Jaimovich and Panizza (JP)	Jaimovich D. and U. Panizza (2010) "Public debt around the world: a new data set of central government debt," Applied Economics Letters, Taylor and Francis Journals, vol. 17(1), pages 19-24.	96 Advanced and Emerging Countries	1970-2005	Gross Central Government Debt/GDP
Leagure of Nations (LON)	League of Nations Archives (1927-1931, 1933-1938, 1940-1941, 1943, 1945) http://digital.library.northwestern.edu/league/stat.html	LON Member Countries	1924-1945	Revenue, Expenditure, Interest Expenditure,

Data Source	Reference	Country Coverage	Period	Concepts
Mitchell International Historical Statistics (Mitchell)	B. R. Mitchell (2003) International Historical Statistics: 1750-2000. Basingstoke and New York: Palgrave Macmillan, 4th edn. Several Editions: Africa, Asia and Oceania; Europe; and The Americas.	Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Kenya, Korea, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Portugal, Russia, Saudi Arabia, Singapore, Sout Africa, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States (46 Countries).	1800-2000	Revenue, Expenditure, GDP, GNP, NMP, NNP
Missale (Miss)	Missale, Alessandro (2000). Public Debt Management. Oxford: Oxford University Press.	Australia, Austria, Denmark, Finland, Greece, Ireland, Portugal	1960-1996	Central Government Debt/GDP
OECD	OECD (2012) - Country Tables 2012. Organization for Economic Cooperation and Development, Paris, France.	OECD Member Countries (30 Countries).	1960-2010	Revenue, Expenditure, Interest Expenditure, Debt
Oxford Latin American Economic History Database (OXLAD)	Oxford Latin American Economic History Database (OxLAD), Latin American Center, Oxford University (2003).	Argentina, Chile, Cuba, El Salvador, Honduras, Panama, Uruguay, Bolivia, Colombia, Dominican Republic, Guatemala, Mexico, Paraguay, Venezuela, Brazil, Costa Rica, Ecuador, Haiti, Nicaragua, Peru (20 Countries).	1990-2000	Nominal GDP
Reinhart & Rogoff (RR)	Reinhart, Carmen M., and Kenneth S. Rogoff. This Time Is Different: Eight Centuries of Financial Folly. Princeton: Princeton UP, 2009. Print.	Emerging, Developing and Advanced Countries	Varies	Debt
Romeu & Kawakami (Romeu)	Romeu, Rafael, and Kei Kawakami, 2007, "Identifying Fiscal Policy Transmission in Stochastic Debt Forecasts" IMF Working Paper 11/107 (Washington: International Monetary Fund).	Brazil	1965-1999	Revenue, Expenditure, Interest Expenditure, Debt
United Nations Statistical Year Books (UNSY)	United Nations Statistical Yearbooks (1948-1949, 1952, 1958, 1962, 1965, 1972, 1978, 1986).	UN Member Countries	1939 - 1978	Revenue, Expenditure, Interest Expenditure

Data Source	Reference	Country Coverage	Period	Concepts
United Nations Debt Supplement (UNDS)	Debt Supplement to UNSY	UN Member Countries	1913 - 1946	Interest Expenditure, Debt
World Economic Outlook, September 2011 version (WEO)	World Economic Outlook (2012). International Monetary Fund.	IMF Member Countries (187 Countries).	1977-2011	Revenue, Expenditure, Interest Expenditure,
Argentina (OF)	Ferreres, Orlando J. Dos Siglos De Economía Argentina: (1810 - 2004) ; Historia Argentina En Cifras. Buenos Aires: Ed. El Ateneo, 2005. Print.	Argentina	1810-2004	Revenue, Expenditure, Interest Expenditure, Debt
Belgium Ministry (NS)	Belgium Finance Ministry Publication	Belgium	1950-1960	Revenue, Expenditure, Interest Expenditure,
Bolivia (DEB)	Huber, Abendroth Hans. <i>La Deuda Externa De</i> Bolivia125 Años De Renegociaciones Y Cuantos Más?: Desde La Operación Secreta Del Gobierno Y Los Meiggs Hasta La Iniciativa HIPC . La Paz, Bolivia: Centro De Estudios Para El Desarrollo Laboral Y Agrario, 2001. Print.	Bolivia	1950-1998	Interest Expenditure
Canada National Statistics (CAN 2)	"Statistics Canada: Canada's National Statistical Agency." Statistics Canada: Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada . Web. 16 Feb. 2012. <http: start-debut-eng.html="" www.statcan.gc.ca="">.</http:>	Canada	1870-1975	Revenue, Expenditure, Interest Expenditure, Gross Public Debt
Canada National Statistics (CAN)	"Historical Statistics of Canada. Edited by M. C. Urquhart and K. A. H. Buckley. Toronto: Macmillan of Canada, 1965. Pp. xv, 672," The Journal of Economic History, Cambridge University Press, vol. 26(02), pages 270-271, June.	Canada	1870-1960	Revenue, Expenditure, Interest Expenditure
Chile (BLJ)	Braun, LI, Juan. Economía Chilena 1810-1995, Estadísticas Históricas = Chile 1810-1995, Economic and Social Statistics. Santiago: Pontificia Universidad Católica De Chile, Instituto De Economía, 2000. Print.	Chile	1810-1995	Revenue, Expenditure, Debt

Data Source	Reference	Country Coverage	Period	Concepts
Colombia National Source (JR)	Junguito, Roberto, and Hernan Rincon. "LA POLITICA FISCAL EN EL SIGLO XX EN COLOMBIA." Journal of Economic Literature (2004). Print.	Colombia	1905-1999	Revenue, Expenditure, Interest Expenditure, Debt
Costa Rica (CRI)	Estadísticas, 1950-1985. San José, Costa Rica: Banco Central De Costa Rica, División Económica, 1986. Print.	Costa Rica	1966-1985	Interest Expenditure
France (France Gov't)	INSEE - Department Comptes Nationaux	France	1949-1977	Total Central Government Debt
Germany Central Bank (BundesBank)	"Bundesbank." <i>Deutsche</i> . Web. 07 Mar. 2012. <http: index.en.php="" www.bundesbank.de="">.</http:>	Germany	1970-2011	Revenue, Expenditure, Overall Fiscal Balance, Interest Expenditure, Primary Balance
Germany Statistics (NS)	"Navigation Und Service." Staat & Gesellschaft. N.p., n.d. Web. 13 July 2012. <https: de="" indikatoren<br="" www.destatis.de="" zahlenfakten="">/LangeReihen/SteuernFinanzen/Irfin01.html>.</https:>	Germany	1950-2010	Revenue, Expenditure, Debt, GDP
Iceland National Source (ISL)	"Historical Statistics." Histotical Statistics. Web. 17 May 2012. <http: english.htm="" frr="" rit="" sogulegt="" thst="" www2.stjr.is="">.</http:>	Iceland	1909-1979	Revenue, Expenditure, Interest Expenditure
India National Source (NS)	India. Dept. of Finance and Commerce.,. "Statistics Compiled from the Finance and Revenue Accounts." (1865): n. pag. Print.	India	1861-1891	Interest Expenditure, Debt
India Historical Statistics (SS)	Sivasubramonian, S. The National Income of India in the Twentieth Century. New Delhi: Oxford UP, 2000. Print.	India	1900-1946	Nominal GDP
India Historical Statistics (PRB)	Brahmananda, P.R. [2001] Money, Income, Prices in 19th Century India:A Historical, Quantitative and Theoretical Study [Mumbai, Himalaya Publishing]	India	1861-1899	Revenue, Expenditure, Interest Expenditure, Nominal GDP

Data Source	Reference	Country Coverage	Period	Concepts
Italy (Italian Gov't)	Bank D'Italia: Francese, Maura, and Angelo Pace. "Questioni Di Economia E Finanza." Banca D'Italia, Occasional Papers 31 (2008).	Italy	1861-2009	Total Consolidated Debt of Public Administrations
Italy Governtment Statistics (Italian Gov't Stats)	Ministero del Tesoro - RGS (1969), Il bilancio dello Stato italiano dal 1862 al 1967 - Volume I: Allegati statistici.	Italy	1862-1967	Revenue, Expenditure, Interest Expenditure
Japan Historical Statistics (JPN)	Ōkawa, Kazushi. Estimates of Long-term Economic Statistics of Japan since 1868, . Tokyo: Toyo Keizai Shinpo Sha, 1966. Print	Japan	1868-1962	Revenue, Expenditure, , Interest Expenditure,
Mexico Historical Statistics (NS)	Estadísticas Históricas De México. Aguascalientes, Ags., México: Instituto Nacional De Estadística, Geografía E Informática (INEGI), 1994. Print.	Mexico	1925-1979	Revenue, Expenditure, Interest Expenditure
Netherlands (Netherlands Gov't)	Bos, Frits (2008). "The Dutch Fiscal Framework: History, Current Practice and the Role of the Central Planning Bureau." CBP Document 150.	Netherlands	1814-2010	Gross General Government Debt, GDP
New Zealand National Accounts (NZ'I Govt)	Statistics New Zealand website on Long Term Data Series (LTDS) accessed in June 2010. http://www.stats.govt.nz/browse_for_stats/economic_in dicators/NationalAccounts/long-term-data-series.aspx	New Zealand	1860-2000	Revenue, Expenditure, Interest Expenditure, Gross Central Government Debt, GDP
Portugal-IMF 'Recent Economic Development' Document (IMF RED)	IMF Documents	Portugal	1974-1978	Revenue, Expenditure, , Interest Expenditure, Gross Public Debt
Portugal (PRT)	Marinheiro, Carlos F. (2006), "The sustainability of Portuguese fiscal policy from a historical perspective", Empirica, 33 (2-3), 155-179. (http://dx.doi.org/10.1007/s10663-006-9013-0)	Portugal	1850-2005	Revenue, Expenditure, Interest Expenditure, State Debt, Gross General Government Debt, GDP
Spain (CT)	Carreras, Albert, and Xavier Tafunell. Estadísticas Históricas De España: Siglos XIX - XX. Bilbao: Fundación BBVA, 2005. Print.	Spain	1850-1994	Revenue, Expenditure, Interest Expenditure, Debt
Sweden - National Source (FG)	Fregert K. and Gustafsson R. (2007), "Fiscal statistics for Sweden 1719–2003," Research in Economic History, Vol. 25, p. 169-223.	Sweden	1800-2004	Revenue, Expenditure, Interest Expenditure

Data Source	Reference	Country Coverage	Period	Concepts
Switzerland Government Publication (FPS)	Schweiz. Eidgenössische Finanzverwaltung. Neuchâtel : Bundesamt Für Statistik. Öffentliche Finanzen Der Schweiz. Neuchâtel : Bundesamt Für Statistik. Print. Statistik Der Schweiz. 18, Öffentliche Finanzen.	Switzerland	1969-2006	Expenditure, Interest Expenditure
UK Statistics (NS)	"Public Spending Chart for United Kingdom 1800- 1970 - Central Government Local Authorities." <i>UK</i> <i>Central Government and Local Authority Public</i> <i>Spending 2013 - Pie Charts Tables</i> . Web. 16 Feb. 2012. <http: downchart_ukgs.<br="" www.ukpublicspending.co.uk="">php?year=1800_1970>.</http:>	United Kingdom	1800-1970	Expenditure, Interest Expenditure, Debt
UK Historical Statistics (UK Gov't)	B.R.Mitchell, British Historical Statistics Chapter XVI (CUP 1988); and Office for National Statistics of the United Kingdom (ONS), available at: http://www.statistics.gov.uk/default.asp	United Kingdom	1830-2004	General Government Debt, GDP
United States Historical Statistics (USHS)	Historical Statistics of the United States (2006) Edited by Susan B. Carter, S. S. Gartner, M. R. Haines, A. L. Olmstead, R. Sutch, G. Wright. Cambridge University Press.	United States	1791-2007	Revenue, Expenditure, Interest Expenditure, Federal Governtment Debt

Notes: The sources listed above are all primary sources used to create the database. For some countries, earlier papers compile useful lists of original sources on varying aspects of fiscal/macro policies, including Reinhart and Rogoff (2009), Abbas, Belhocine, El-Ganainy, and Horton, (2011, IMF Economic Review), Catao and Terrones (2003) & Bordo, Eichengreen, Klingebiel, and Martinez-Peria (2001). Researchers who are interested in additional primary sources should refer to these papers.

Appendix Table 2. Source Breakdowns of Final Spliced Series

United States (111)-Final Series
Revenue: 1800-1939 (HSUS); 1940-1959 (Mitchell); 1960-2000 (OECD); 2001-2016 (WEO)
Expenditure: 1800-1959 (HSUS); 1960-2000 (OECD); 2001-2016 (WEO)
Interest Expenditure: 1800-1959 (HSUS); 1960-2000 (OECD); 2001-2016 (WEO)
Gross Public Debt:1800-1959 (HSUS); 1960-2000 (OECD); 2001-2016 (WEO)
United Kingdom (112)-Final Series
Revenue: 1830-1879 (MIT);1880-1913 (FZ); 1914-1938 (Mitchell); 1939-1969 (UNSY / UK Gov't); 1970-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1830-1879 (MIT);1880-1913 (FZ);1914-1938 (Mitchell); 1939-1969 (UNSY / UK Gov't); 1970-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1800-1879 (NS); 1880-1913 (FZ); 1914-38 (NS); 1939-1969 (UNSY / UK Gov't); 1970-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1800-1879 (NS); 1880-1991 (UK Govt); 1992-2006 (AMECO); 2007-2016 (WEO)
Austria (122)-Final Series
Revenue: 1880-1912 (FZ); 1924-1937 (Mitchell); 1948-1959 (UNSY/Mitchell); 1960-1975 (OECD); 1976-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1880-1912 (FZ); 1924-1937 (Mitchell);1948-1959 (UNSY/Mitchell); 1960-1975 (OECD); 1976-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1912 (FZ); 1924-1937 (UNDS/Mitchell); 1948-1959 (UNSY/Mitchell); 1960-1975 (OECD); 1976-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1880-1913 (FZ); 1924-1937 (UNDS/Mitchell); 1948-1959 (UNSY/Mitchell); 1960-1969 (UNSY/OECD); 1970-1989 (OECD); 1990-2010 (AMECO); 2011-2016 (WEO)
Belgium (124)-Final Series
Revenue: 1835-1879 (Mitchell); 1880-1913 (FZ); 1933-1939 (Mitchell); 1946-1949 (UNSY/Mitchell); 1950-1956 (NS); 1957-1969 (UNSY/Mitchell); 1970-1977 (OECD); 1978-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1835-1879 (Mitchell); 1880-1913 (FZ); 1933-1939 (Mitchell); 1946-1949 (UNSY/Mitchell); 1950-1956 (NS); 1957-1969 (UNSY/Mitchell); 1970-1977 (OECD); 1978-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (FZ); 1933-1939 (LON/Mitchell); 1950-1956 (NS); 1957-1969 (UNSY/Mitchell); 1970-1977 (OECD); 1978-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1835-1879 (RR); 1880-1913 (FZ); 1920-1939 (RR); 1946-1969 (UNSY/Mitchell); 1970-1989 (OECD); 1990-2010 (AMECO); 2011-2016 (WEO)
Denmark (128)-Final Series
Revenue: 1880-1913 (FZ); 1914-1923 (Mitchell); 1924-1945 (LON/Mitchell); 1946-1953 (Mitchell); 1954-1970 (UNSY/Mitchell); 1971-2010(AMECO); 2011-2016 (WEO)
Expenditure: 1880-1913 (FZ); 1914-1923 (Mitchell); 1924-1945 (LON/Mitchell); 1946-1953 (Mitchell); 1954-1970 (UNSY/Mitchell); 1971-2010(AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (FZ); 1914-1945 (UNDS/Mitchell); *1946-1953 Gap* 1954-1970 (UNSY/Mitchell); ; 1971-2010(AMECO); 2011-2016 (WEO)
Gross Public Debt: 1880-1913 (FZ); 1914-1945 (UNDS/Mitchell); *1947-1952 Gap* 1954-1963 (UNSY/Mitchell); 1964-1976 (IFS/Mitchell); 1977-1989 (MISS/Mitchell); 1990-2010 (AMECO); 2011-2016 (WEO)
France [132]-Final Series
Revenue: 1880-1913 (FZ); 1925-1937 (Mitchell); 1946-1971 (UNSY/Mitchell); 1972-1977 (Mitchell); 1978-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1880-1913 (FZ); 1925-1937 (Mitchell); 1946-1971 (UNSY/Mitchell); 1972-1977 (Mitchell); 1978-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (FZ); 1925-1937(LON/Mitchell); 1946-1971 (UNSY/Mitchell); 1972-1977 (OECD); 1978-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1880-1913 (FZ); 1920-1932 (UNDS/Mitchell); 1946-1948 (UNSY/Mitchell); 1949-1977 (France Govt/Mitchell); 1978-2010 (AMECO); 2011-2016 (WEO)
Germany (134)-Final Series
Revenue: 1880-1913 (F2); 1925-1934 (LON/Mitchell); 1950-1969 (NS); 1970-1990 (Bundesbank); 1991-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1880-1913 (FZ); 1925-1934 (LON/Mitchell); 1950-1969 (NS); 1970-1990 (Bundesbank); 1991-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (F2); 1925-1934 (LON/Mitchell); 1950-1959 (UNSY/Mitchell'58)59 Calc); 1960-1969 (UNSY/OECD); 1970-1990 (Bundesbank); 1991-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1880-1913 (FZ); 1925-1938 (UNDS/Mitchell); 1950-1975 (NS/WEO); *1976 Calc*; 1977-2016 (WEO)
hele (436) Final Carine
Italy (136)-FINAL Series
neveniue: 1002-1307 (Tialian Gur Cade); 1308-1373 (DECD); 1308-2010 (ANECO); 2011-2010 (WEO) Funanditiue: 1802 (Alcilian Carl Static): 1009 1010 (ANECO); 2011-2010 (WEO)
Expenditure: 1802-1920 (Talifall Guy Catas); 1936-1979 (DECD); 1930-2010 (AMECU); 2011-2010 (WEU)
Interest experioritaries 1602-1907(Tatian Gov (Stats); 1908-1973 (DECU); 1802-2010 (AMECU); 2011-2016 (WEU)
01055 FUDITE DEDIE: 1001-1905 (Italiali GUV (); 1964-2010 (AIVECU); 2011-2010 (WEC)

Norway (142)-Final Series
Revenue: 1880-1913 (FZ); 1914-1939 (Mitchell); 1946-1961 (UNSY/Mitchell); 1962-1989 (OECD); 1990-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1880-1913 (FZ); 1914-1939 (Mitchell); 1946-1961 (UNSY/Mitchell); 1962-1989 (OECD); 1990-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (FZ);1914-1939 (UNDS/Mitchell); 1946-1961 (UNSY/Mitchell); 1962-1989 (OECD); 1990-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1880-1913 (FZ); 1914-1939 (UNDS/Mitchell); 1946-1969 (UNSY/Mitchell); 1970-1995 (OECD); 1996-2016 (WEO)
Sweden (144)-Final Series
Revenue: 1800-1992 (FG); 1993-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1800-1992 (FG); 1993-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1800-1992 (FG); 1993-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1800-1992 (FG); 1993 (OECD); 1994-2010 (AMECO); 2011-2016 (WEO)
Switzeriand (146)-Final Series
Revende: 1899-1915 (F2); 1929-1956 (LON / Mitchel); 1939-1955 (UNSY Mitchel); 1960-1959 (Witchel); 1970-1869 (UEC); 1990-2010 (AWEC); 2011-2016 (WEC) Evanolities: 1809 (1912 (E2): 1920-1930 (1922)); 1930-1955 (UNSY Mitchel); 1960-1959 (UNC); 1970-1869 (UEC); 2011-2016 (WEC); 2010-2010 (WEC); 2011-2016 (WEC); 2010-201
Expenditure: 1637-1515 (F2), 1327-1556 (EUR / Mitchell), 1535-1505 (Mitchell), 1500-1505 (Mitchell), 1570-1565 (F1.10 F757 (CEO), 1500-2010 (Mitchell), 1570-1506 (Mitchell), 1570-1565 (F1.10 F757 (CEO), 1500-2010 (Mitchell), 1570-1506 (Mitchell), 1570-1565 (F1.10 F757 (CEO), 1500-2010 (Mitchell), 1570-1566
Interest expenditure: 1839-1913 (F2), 1929-1938 (UNI / Mitchell); 1939-1969 (UNI / Mitchell); 1970-1969 (L.B. FPS / OCCU); 1930-2010 (AMECO); 2011-2016 (WEO)
GLOSS PUBLIC DEDI: 1839-1915 (F2); 1929-1938 (UNDS / MICHENE); 1939-1969 (UNSY MICHENE); 1970-89 (UECD); 1990-2016 (WED)
Canada (156)-Final Series
Revenue: 1870-1960 (CAN); 1961-2000 (OECD); 2001-2016 (WEO)
Expenditure: 1870-1960 (CAN); 1961-2000 (DECD); 2001-2016 (WEO)
Interest Expenditure: 1870-1960 (CAN); 1961-2000 (OECD); 2001-2016 (WEO)
Gross Public Debt: 1870-1960 (CAN2); 1961-2000 (OECD); 2001-2016 (WEO)
Japan (158)-Final Series
Revenue: 1875-1889 (JPN); 1890-1921 (Mitchell / JPN); 1922-1943, 1947-1959 (JPN); 1960-1980 (OECD); 1981-2016 (WEO)
Expenditure: 1875-1889 (JPN); 1890-1921 (Mitchell / JPN); 1922-1943, 1947-1959 (JPN); 1960-1980 (OECD); 1981-2016 (WEO)
Interest Expenditure: 1875-1956 (JPN); 1957-1959 (UNSY / JPN); 1960-1980 (OECD); 1981-2016 (WEO)
Gross Public Debt: 1875-1969 (JPN); 1970-1980 (OECD); 1981-2016 (WEO)
Eigland (470) Eigel Castan
Finand (172)-Final Series
Nevender 1802-1394 / (Mitchieft), 1346-1374 (UNST / Mitchieft), 1373-2010 (AMICCO), 2011-2010 (W EC)
Expenditure: 1602-1347 (Winturen), 1346-1374 (UNST / Wintern), 1373-2010 (AWICO), 2011-2010 (WEC))
Interest expenditure: 1916-1945 (UNDS / Mitchell); 1946-1974 (UNS / Mitchell); 1975-2010 (Mitchell); 2011-2016 (WEO)
GLO22 AND CEDE: 1314-1349 (DUD2 \ WILCUEIL); 1348-1318 (DU21 \ WILCUEIL); 1323 IE2 \ WILCUEIL); 1313-1389 (MEC); 1330-2010 (WEC); 2011-2019 (MEC)
Greece (174)-Final Series
Revenue: 1880-1913 (FZ); 1927-1939 (LON / Mitchell); 1948-1978 (UNSY / Mitchell); 1979-1987 (WEO); 1988-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1880-1913 (FZ); 1927-1937 (LON / Mitchell); 1948-1978 (UNSY / Mitchell); 1979-1987 (WEO); 1988-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (FZ); 1927-1939 (LON / Mitchell); 1948-1964 (UNSY / Mitchell); 1965-1987 (OECD); 1988-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1884-1913 (FZ); 1927-1939 (UNDS / Mitchell); 1948-1978 (UNDS / Mitchell); 1979-1989 (WEO); 1990-2010 (AMECO); 2011-2016 (WEO)

65

Netherlands (138)-Final Series

Revenue: 1880-1913 (FZ); 1923-1939 (Netherlands Gov't); 1949-1968 (UNSY/Mitchell); 1969-2010 (AMECO); 2011-2016 (WEO) Expenditure: 1880-1913 (FZ); 1923-1939 (Netherlands Gov't); 1949-1968 (UNSY/Mitchell); 1969-2010 (AMECO); 2011-2016 (WEO) Interest Expenditure: 1880-1913 (FZ); 1914-1939 (Netherlands Gov't); 1949-1968 (UNSY/Mitchell); 1969-2010 (AMECO); 2011-2016 (WEO)

Gross Public Debt: 1814-1939, 1946-1989 (Netherlands Gov't); 1990-2010 (AMECO); 2011-2016 (WEO)

Iceland (176)-Final Series
Revenue: 1909-1979 (ISL): 1980-2016 (WEO)
Expenditure: 1909-1979 (ISL): 1980-2016 (WEO)
Interest Expenditure: 1909-1979 (ISL): 1980-2016 (WEO)
Gross Public Debt: 1909-1979 (RB: 1980-2016 (WEO)
Ireland (178)-Final Series
Revenue: 1938-1959 (UNSY / Mitchell); 1960-1984 (OECD); 1985-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1938-1959 (UNSY / Mitchell); 1960-1984 (OECD); 1985-2010 (AMECO); 2011-2016 (WEO)
Interest Expenditure: 1938-1959 (UNSY / Mitchell); 1960-1984 (OECD); 1985-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1938-1959 (UNSY / Mitchell); 1960-1978 (Miss / OECD); 1979-1989 (WEO); 1990-2010 (AMECO); 2011-2016 (WEO)
Portugal (182)-Final Series
Revenue: 1880-1913 (FZ); 1917-1959 (PRT); 1960-1973 (PRT / OECD); 1974-1977 (IMF RED); 1978-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1880-1913 (FZ): 1917-1959 (PRT): 1960-1973 (PRT / OECD): 1974-1977 (IMF RED): 1978-2010 (AMECO): 2011-2016 (WEO)
Interest Expenditure: 1880-1913 (FZ); 1919-1959 (PRT); 1960-1973 (PRT / OECD); 1974-1977 (IMF RED); 1978-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1850-1989 (PRT); 1990-2010 (AMECO); 2011-2016 (WEO)
Spain (184)-Final Series
Revenue: 1850-1935, 1940-1994 (CT); 1995-2010 (AMECO); 2011-2016 (WEO)
Expenditure: 1850-1935, 1940-1944 (CT); 1995-2010 (AMECO); 2011-2016 (WEO)
Interest txpenditure: 1850-1935, 1940-1994 (C1); 1995-2010 (AMECO); 2011-2016 (WEO)
Gross Public Debt: 1850-1935, 1940-1994 (CI); 1995-2010 (AMECO); 2011-2016 (WEO)
Turkey (186)-Final Series
Revenue: 1948-1949 (Mitchell / UNSY); 1950-2001 (Mitchell); 2002-2016 (WEO)
Expenditure: 1948-1949 (Mitchell / UNSY); 1950-2001 (Mitchell); 2002-2016 (WEO)
Interest Expenditure: 1970-2001 (IFS / Mitchell); 2002-2016 (WEO)
Gross Public Debt: 1948-1949 (UNSY); 1950 (UNSY / Mitchell); 1954-1972 (UNSY / Mitchell); 1973-1975 (IFS / Mitchell); 1976-1981 (UNSY / Mitchell); 1982-1999 (AC); 2000-2016 (WEO)
Australia (193)-Final Series
Revender 1911 1935 (Mitchall): 1960-1916 (HED):
Expenditure 1911155 (Mitchell), 1905 2010 (2010), 2010 (WED)
Interior Experimente: 19124 (00):57 Mitchelly, 1929 1949 (EDITY Mitchell): 1977-1987 (Miss / OFFIC): 1988-1997 (MED) (MED) (MED) (MED) (MED)
New Zealand (196)-Final Series
Revenue: 1876-1984 (NZL Gov't); 1985-2016 (WEO)
Expenditure: 1876-1984 (NZL Gov't); 1985-2016 (WEO)
Interest Expenditure: 1913-1928 (UNDS / NZL Gov't); 1929-1944 (LON / NZL Gov't); 1947-1957 (UNSY / NZL Gov't); 1958-1965 (UNSY / OECD); 1966-1984 (NZL Gov't); 1985-2016 (WEO)
Gross Public Debt: 1876-1984 (NZL Gov't); 1985-2016 (WEO)
South Africa (199)-Final Series
Revenue: 1913-1953 (Mitchell); 1954-1976 (UNSY / Mitchell); 1977-1999 (Mitchell); 2000-2016 (WEO)
Expenditure: 1913-1953 (Mitchell); 1954-1976 (UNSY / Mitchell); 1977-1999 (Mitchell1990 CALC); 2000-2016 (WEO)
Interest Expenditure: 1913-1946 (UNDS / Mitchell); 1947-1948 (CALC); 1954-1976 (UNSY / Mitchell); 1980-1999 (IFS / Mitchell): 2000-2016 (WEO)
Gross Public Debt: 1913-1946 (UNDS / Mitchell); 1947-1979 (UNSY / Mitchell); 1980-1999 (CLYPS); 2000-2016 (WEQ)

Argenting (212) Final Carios
Argenuna (213)-rinai series
Expenditure: 1864-1996 (OF): 1997-2016 (WEO)
Interest Expenditure: 1864-1996 (QF): 1997-2016 (WEQ)
Gross Public Debt: 1864-1996 (OF) (1866, 1985 CALC): 1997-2016 (WEO)
Bolivia (218)-Final Series
Revenue: 1950-1981 (Mitchell); 1982-2016 (WEO)
Expenditure: 1950-1981 (Mitchell); 1982-2016 (WEO)
Interest Expenditure: 1955-1964 (UNSY / Mitchell); 1965-1984 (DEB); 1985-2016 (WEO)
GLOSS ANDIE DEDE: TA10-TAAA (MC) 5000-5019 (MED)
Brazil (223)-Final Series
Revenue: 1880-1913 (FZ): 1914-1923 (Mitchell / OXLAD): 1924-1943 (LON / OXLAD): 1944-1951 (UNSY / OXLAD): 1952-1959 (UNSY / IFS): 1960 (Mitchell / IFS): 1961 (UNSY / IFS): 1962-1964 (UNSY / WEO): 1965-1986 (Romeu):
1996-2016 (WEO)
Expenditure: 1880-1913 (FZ): 1914-1923 (Mitchell / OXLAD): 1924-1943 (LON / OXLAD): 1944-1951 (UNSY / OXLAD): 1952-1959 (UNSY / JFS): 1960 (Mitchell / JFS): 1961 (UNSY / JFS): 1962-1964 (UNSY / WFO): 1965-1986
(Romeu): 1996-2016 (WEO)
Interest Expenditure: 1881-1913 (FZ); 1928-1933, 1941-1943 (LON / OXLAD); 1965-1986 (Romeu); 1996-2016 (WEO)
Gross Public Debt: 1880-1913 (FZ); 1923-1964 (RR); 1965-1999 (Romeu); 2000-2016 (WEO)
Chile (228)-Final Series
Revenue: 1810-1995(BL); 1996-2016 (WEO)
Expenditure: 1810-1995(BU); 1996-2016 (WEO)
Interest Expenditure: 1940-1943 (LON / OXED); 1977-1995 (IFS); 1996-2016 (WEO)
GIOSS PUBLIC DEDI: 1940-1995 (KK); 1990-2010 (WEO)
Colombia (233)-Final Series
Revenue: 1905-1999 (JR); 2000-2016 (WEO)
Expenditure: 1905-1999 (JR); 2000-2016 (WEO)
Interest Expenditure: 1923-1999 (JR); 2000-2016 (WEO)
Gross Public Debt: 1905-1922 (RR); 1923-1999 (JR); 2000-2016 (WEO)
Costa Rica (238)-Final Series
Revenue: 1956-1969 (UNSY / Mitchell); 1970-1999 (Mitchell); 2000-2016 (WEO)
Expenditure: 1956-1969 (UNSY / Mitchell); 1970-1999 (Mitchell); 2000-2016 (WEO)
Interest Expenditure: 1956-1969 (UNSY / Mitchell); 1970-1985 (CRI); 1986-1999 (IFS); 2000-2016 (WEO)
Gross Public Debt: 1956-1969 (UNSY / Mitchell); 1970-1999 (RR); 2000-2016 (WEO)
Dominican Republic (243)-Final Series
Revenue: 1950-1961 (UNSY / Mitchell); 1962-1971 (UNSY / WEO); 1972-1999 (Mitchell / WEO); 2000-2016 (WEO)
Expenditure: 1950-1951 (UNSY / Mitchell); 1962-1971 (UNSY / WEO); 1972-1999 (Mitchell / WEO); 2000-2016 (WEO)
Interest Expenditure: 1980-2016 (WEO)
GLO22 ANDIE DEDE: TAPP-TAAA (KK): SOND-SOTP (MED)
Honduras (268)-Final Series
Revenue: 1927-1938 (LON / Mitchell); 1939-1942 (UNSY / Mitchell); 1943-1953 (Mitchell); 1954-1971 (Mitchell); 1972-1997 (Mitchell); 1998-2016 (WEO)
Expenditure: 1927-1938 (LON / Mitchell); 1939-1942 (UNSY / Mitchell); 1943-1953 (Mitchell); 1954-1971 (Mitchell); 1972-1997 (Mitchell); 1998-2016 (WEO)
Interest Expenditure: 1952-1971 (UNSY / Mitchell); 1972-1997 (IFS); 1998-2016 (WEO)
Gross Public Debt: 1926-1938 (UNDS / Mitchell); 1939-1972 (UNSY / Mitchell); 1973-1997 (AC); 1998-2016 (WEO)

68

Revenue: 1900-1913, 1917-1952 (Mitchell / OXLAD); 1953-1965 (UNSY / OXLAD); 1966-1981 (Mitchell / OXLAD); 1982-1995 (Mitchell / WEO); 1996-2016 (WEO) Expenditure: 1900-1913, 1917-1952 (Mitchell / OXLAD); 1953-1965 (UNSY / OXLAD); 1966-1981 (Mitchell / OXLAD); 1982-1995 (Mitchell / WEO); 1996-2016 (WEO) Interest Expenditure: 1917-1924 (UNDS / OXLAD); 1925-1952 (NS); 1953-1965 (UNSY / OXLAD); 1966-1979 (NS); 1970-1995 (IFS); 1996-2016 (WEO) Gross Public Debt: 1913-1937 (UNDS / OXLAD); 1938-1969 (UNSY / OXLAD); 1970-1980 (AC); 1981 (RR); 1982-1995 (CLYPS); 1996-2016 (WEO)

Panama (283)-Final Series

Revenue: 1946-1977 (UNSY / Mitchell); 1978-1981 (Mitchell); 1982-2016 (WEO) Expenditure: 1946-1977 (UNSY / Mitchell); 1978-1981 (Mitchell); 1982-2016 (WEO) Interest Expenditure: 1956-1977 (UNSY / Mitchell) 1982-2016 (WEO) Gross Public Debt: 1946-1972 (UNSY / Mitchell); 1973-1984 (AC); 1985-1991 (RR); 1992-2016 (WEO)

Paraguay (288)-Final Series

Revenue: 1967-1978 (UNSY / WEO); 1979-2016 (WEO) Expenditure: 1967-1978 (UNSY / WEO); 1979-2016 (WEO) Interest Expenditure: 1967-1978 (UNSY / WEO); 1979-2016 (WEO) Gross Public Debt: 1970-1989 (RR); 1990-2016 (WEO)

Peru (293)-Final Series

Revenue: 1900-1926 (Mitchell / OXLAD); 1927-1945 (LON / OXLAD); 1946-1969 (Mitchell / OXLAD); 1970-1999 (Mitchell / WEO); 2000-2016 (WEO) Expenditure: 1900-1926 (Mitchell / OXLAD); 1927-1945 (LON / OXLAD); 1946-1969 (Mitchell / OXLAD); 1970-1999 (Mitchell / WEO); 2000-2016 (WEO) Interest Expenditure: 1970-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1900-1968 (RR); 1970-1999 (AC); 2000-2016 (WEO)

Uruguay (298)-Final Series

Revenue: 1955-1998 (Mitchell); 1999-2016 (WEO) Expenditure: 1955-1998 (Mitchell); 1999-2016 (WEO) Interest Expenditure: 1972-1998 (IFS); 1999-2016 (WEO) Gross Public Debt: 1970-2003 (AC); 2004-2016 (WEO)

Venezuela (299)-Final Series

Revenue: 1920-1926 (Mitchell / OXLAD); 1927-1937 (LON / OXLAD); 1938-1979 (UNSY / OXLAD); 1980-1987 (Mitchell); 1988-2016 (WEO) Expenditure: 1920-1926 (Mitchell / OXLAD); 1927-1937 (LON / OXLAD); 1938-1979 (UNSY / OXLAD); 1980-1987 (Mitchell); 1988-2016 (WEO) Interest Expenditure: 1921-1926 (UNDS / OXLAD); 1927-1937 (LON / OXLAD); 1949-1979 (UNSY / OXLAD); 1988-2016 (WEO) Gross Public Debt: 1920-1937 (UNDS / OXLAD); 1938-1953 (UNSY / OXLAD); 1954-1959 (RR); 1960-1975 (UNSY / OXLAD); 1976-1993 (RR); 1994-2016 (WEO)

Israel (436)-Final Series

Revenue: 1950-1970 (UNSY / Mitchell); 1975-1994 (Mitchell); 1995-2010 (OECD); 2011-2016 (WEO) Expenditure: 1950-1970 (UNSY / Mitchell); 1975-1994 (Mitchell); 1995-2010 (OECD); 2011-2016 (WEO) Interest Expenditure: 1954-1970 (UNSY / Mitchell); 1980-1994 (IFS); 1995-2010 (OECD); 2011-2016 (WEO) Gross Public Debt: 1972-1980, 1983-1994 (AC); 1995-2010 (OECD); 2011-2016 (WEO)

India (534)-Final Series

Revenue: 1861-1899 (Mitchell / PRB); 1900-1944 (Mitchell / SS); 1945-1947 (UNSY / SS); 1948 (Mitchell); 1949-1979 (UNSY / Mitchell); 1980-1987 (Mitchell); 1988-2016 (WEO) Expenditure: 1861-1899 (Mitchell / PRB); 1900-1944 (Mitchell / SS); 1945-1947 (UNSY / SS); 1948 (Mitchell); 1949-1979 (UNSY / Mitchell); 1980-1987 (Mitchell); 1988-2016 (WEO) Interest Expenditure: 1861-1891 (NS / PRB); 1913-1944 (UNDS / SS); 1945-1947 (UNSY / SS); 1948 (CALC); 1949-1979 (UNSY / Mitchell); 1980-1988 (IFS); 1989-2016 (WEO) Gross Public Debt: 1861-1891 (NS / PRB); 1913-1944 (UNDS / SS); 1945-1947 (UNSY / SS); 1948-1979 (UNSY / Mitchell); 1980-1992 (RR); 1993-2016 (WEO)

Indonesia (536)-Final Series
Revenue: 1951-1992 (Mitchell); 1993-2016 (WEO)
Expenditure: 1951-1992 (Mitchell); 1993-2016 (WEO)
Interest Expenditure: 1972-1978 (UNSY / Mitchell); 1979-1992 (IFS); 1993-2016 (WEO)
Gross Public Debt: 1970-1975 (RR); 1976-1980 (UNSY / Mitchell); 1981-1999 (AC); 2000-2016 (WEO)
Korea (542)-Final Series
Revenue: 1953-1954 (Mitchell / WEO); 1955 (CALC); 1953-1978 (UNSY / WEO); 1979-1994 (Mitchell / WEO); 1995-2016 (WEO)
Expenditure: 1953-1954 (Mitchell / WEO); 1955 (CALC); 1953-1978 (UNSY / WEO); 1979-1994 (Mitchell / WEO); 1995-2016 (WEO)
Interest Expenditure: 1953-1978 (UNSY / WEO); 1979-1994 (IFS); 1995-2016 (WEO)
Gross Public Debt: 1958-1969 (IFS / WEO); 1970 (CALC); 1971-1994 (AC); 1995-2016 (WEO)
Pakistan (564)-Final Series
Revenue: 1950-1967 (UNSY / Mitchell); 1967-1970 (Mitchell); 1971-1977 (UNSY / Mitchell); 1978-1992 (Mitchell); 1993-2016 (WEO)
Expenditure: 1950-1967 (UNSY / Mitchell); 1967-1970 (Mitchell); 1971-1977 (UNSY / Mitchell); 1978-1992 (Mitchell); 1993-2016 (WEO)
Interest Expenditure: 1950-1967, 1971-1977 (UNSY / Mitchell); 1978-1992 (IFS); 1993-2016 (WEO)
Gross Public Debt: 1951-1961 (IFS / Mitchell); 1962-1969 (IFS / WEO); 1970-1990 (JP); 1994-2016 (WEO)
Philippines (566)-Final Series
Revenue: 1946-1988 (Mitchell); 1989-2016 (WEO)
Expenditure: 1946-1988 (Mitchell); 1989-2016 (WEO)
Interest Expenditure: 1954-1973 (UNSY / Mitchell); 1974-1988 (IFS); 1989-2016 (WEO)
Gross Public Debt: 1954-1973 (UNSY / Mitchell); 1974-1989 (AC); 1990-2016 (WEO)
The land (F20) Final Carlos
Inaliand (578)-Final Series
Revenue: 1946-1978 (UNS7 / WILLINEI); 1979-1999 (WILLINEI); 2000-2016 (WEQ)
Expenditure: 1948-1978 (00517 Mitchell); 1979-1999 (Mitchell); 2000-2016 (WEO)
Interest Europhiture: 10E7 1079 / UNEV / Mitchell), 1070 1000 / EE), 2000 2016 / WEO)
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO)
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1948-1999 (RR); 2000-2016 (WEO)
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1948-1999 (RR); 2000-2016 (WEO) Ghana (652)-Einal Series
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1948-1999 (RR); 2000-2016 (WEO) Ghana (652)-Final Series Revenue: 1962-1978 (UNSY / WEO): 1979 (Mitchell / WEO): 1980-2016 (WEO)
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1948-1999 (RR); 2000-2016 (WEO) Ghana (652)-Final Series Revenue: 1962-1978 (UNSY / WEO); 1979 (Mitchell / WEO); 1980-2016 (WEO) Expenditure: 1962-1978 (UNSY / WEO): 1979 (Mitchell / WEO): 1980-2016 (WEO)
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1948-1999 (RR); 2000-2016 (WEO) Ghana (652)-Final Series Revenue: 1962-1978 (UNSY / WEO); 1979 (Mitchell / WEO); 1980-2016 (WEO) Expenditure: 1962-1978 (UNSY / WEO); 1979 (Mitchell / WEO); 1980-2016 (WEO) Interest Expenditure: 1962-1978 (UNSY / WEO): 1979 (CALC): 1980-2016 (WEO)
Interest Expenditure: 1957-1978 (UNSY / Mitchell); 1979-1999 (IFS); 2000-2016 (WEO) Gross Public Debt: 1948-1999 (RR); 2000-2016 (WEO) Ghana (652)-Final Series Revenue: 1962-1978 (UNSY / WEO); 1979 (Mitchell / WEO); 1980-2016 (WEO) Expenditure: 1962-1978 (UNSY / WEO); 1979 (CALC); 1980-2016 (WEO) Interest Expenditure: 1962-1978 (UNSY / WEO); 1979 (CALC); 1980-2016 (WEO) Gross Public Debt: 1962-1978 (UNSY / WEO); 1979-1989 (ACL); 1990-2016 (WEO)

Note: (AMECO) indicates that both the fiscal data and nominal GDP was obtained from the AMECO database while (UNSY/Mitchell) indicates that fiscal data was obtained from United Nations Statistical Yearbook, while nominal GDP data was obtained from Mitchell. (CALC) signifies an occasional interpolation (rare cases; no more than 0.25 percent of total observations in the database) to fill a persistent gap of at most 2 years. Any country not reported here lacks a long time series; the data were retrieved from the latest WEO.

1). Do we have data from more than 1 source? Yes No L \checkmark 2a). Do any of the sources in 2b). Are these data reasonable question cover all concepts? compared to other sources covering the same time period and / or country?* Yes No V Yes No 3b). Do sources jointly 3a). Does said source Ľ 1 provide at least 10 years provide at least 10 years Use them. Leave blank, or of continuous data for all of continuous data interpolate using concepts, including the including year in other sources if a question? year in question? gap of less than 3 years results. Yes No No Yes L 1 4b). Is using said 4c). Go 4d). Go



Appendix Figure 1. Splicing Decision Tree

⁴a). Are these data reasonable compared to source(s) the to 4a. to 4b. other sources covering the only way to fill a same time period and / or persistent gap? country? Yes No Yes No L Use 5b). Are these data 5a). Back 5c). Have all other them. reasonable to 2a); sources / compared to other consider combinations different sources covering thereof been sources. the same time considered? period and / or Yes country? No Yes No 6a). Are these data 6b). Back 1 reasonable compared to 2a); L to other sources consider Use them. Leave blank, or covering the same time different interpolate if a gap period and / or country? sources. of less than 3 years results.* Yes No L ノ Use them. Leave blank, or interpolate if a gap of less than 3 years results.*

^{*} Rare cases; see appendix table 2.