

**Online Appendix to the Paper “Sovereign Debt Relief and its Aftermath”  
by Carmen M. Reinhart and Christoph Trebesch**

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## Appendix A: Debt Relief in the 1920s and 1930s: Country Chronologies, Data, and Sources

Table A.1. Chronology of Events Leading Up to the Defaults of 1934

<b>International</b>	
August 1924	Dawes Plan lays out German reparations of 1 billion marks a year, rising to 2.5 billion in five years. It was a restructuring of the terms that were agreed to in the 1919 Treaty of Versailles.
June 1929	The Young Plan was designed to ease the terms of the reparation payments made by Germany, making a substantial share of the repayment state contingent. It is a second restructuring.
June 20, 1931	Hoover Moratorium on payments of WWI and other war and reconstruction debts, including interest payments.
July 9, 1932	Lausanne Conference: the European powers including the United Kingdom, France, Belgium, and Italy agree to suspend all war debt payments among themselves subject to a revision of their debts to the United States. The UK, by far the most important creditor country in Europe, only has outstanding debt obligations to the United States.
June 15, 1934	Default of all debtors (except Finland) announced in the US popular press. (See New York Times, June 15, 1934)
<b>Austria</b>	
May 8, 1930	Agreement to reschedule war debt with the United States.
May 11, 1931	Kreditanstalt failure: Despite the Austrian government's guaranty to cover the bank's foreign debt, the bank failure quickly spread through Europe and international capital markets.
October 9, 1931	Foreign exchange controls and depreciation.
May 1933	Payments to the Bank of International Settlements, for the service of the League of Nations loan, are suspended. (A default on an official creditor)
August 1933	Standstill agreement of Austrian banks prolonged until January 1934.
<b>Australia</b>	
December 1929	Suspension of Gold Standard.
July 1932	Suspension of war debt payments to the UK following the Lausanne Conference.
<b>Belgium</b>	
August 18, 1925	Agreement to reschedule war debt with the United States.
December 31, 1925	Agreement to reschedule war debt with the United Kingdom
March 18, 1935	Foreign exchange controls reintroduced; devaluation of 28%.
June 15, 1934	Government notifies US of decision to defer payment on war debt installment.
<b>Czechoslovakia</b>	
October 1931	Controls on foreign exchange.
June 15, 1934	Government notifies US of decision to defer payment on war debt installment.
<b>Estonia</b>	
October 28, 1925	Agreement to reschedule war debt with the United States.
October 1931	Controls on foreign exchange.
<b>Finland</b>	
May 1, 1923	Agreement to reschedule war debt with the United States (maturity extension and interest rate reduction only).
June 1934	Only country to pay its war debt installment to the US in full and on time.

Table A.1. Chronology of Events Leading Up to the Defaults of 1934 (continued)

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<b>France</b>	
April 29, 1926	Agreement to reschedule war debt with the United States.
July 12, 1926	Agreement to reschedule war debt with the United Kingdom.
December 1932	Chamber rejected the government's proposal to meet the War debt payment to the US scheduled for mid-December.
June 15, 1934	Government notifies US of decision to defer payment on War debt installment.
<b>Germany</b>	
December 1922	Reparations Commission declares Germany in default, culminating in the French occupation of the Ruhr.
July 13, 1931	Following the Kreditanstalt crisis in Austria, foreign exchange controls are introduced; a variety of blocked Mark accounts are created through mid-1933.
February 1932	Moratoria on external commercial debt payments (i.e. default on private creditors).
August 1932	Reparation payments under the Young Plan cancelled but other payments continued.
May 1933	Unilateral and generalized default and widespread capital controls.
July 1, 1934	General moratorium on transfers abroad.
December 1, 1936	Death penalty for capital flight.
<b>Greece</b>	
April 9, 1927	Agreement to reschedule war debt with the United Kingdom.
May 10, 1929	Agreement to reschedule war debt with the United States.
Sept. 28, 1931	Control on foreign exchanges; 49% currency depreciation.
April 1932	Moratoria on all external sovereign debt service (i.e., as with other cases noted below, this is a default on private creditors).
June 15, 1934	Postpones for six months payment to US of interest on war debt due July 1 <sup>st</sup> .
<b>Hungary</b>	
April 25, 1924	Agreement to reschedule war debt with the United States.
September 1931	Controls on foreign exchange.
December 1931	Moratoria on all external sovereign debt service.
January 1933	Standstill agreement renewed.
<b>Italy</b>	
Nov. 14, 1925	Agreement to reschedule war debt with the United States.
January 12, 1926	Agreement to reschedule war debt with the United Kingdom.
September 1931	Re-introduction of some foreign exchange controls.
May 26, 1934	De facto suspension of convertibility; controls on exportation of bank notes.
June 15, 1934	Government notifies US of decision to defer payment on War debt installment.
<b>Latvia.</b>	
Sept. 24, 1925	Agreement to reschedule war debt with the United States.
October 1931	Controls on foreign exchange.
April 1932	Moratoria on external sovereign debt service.
June 15, 1934	Government notifies US of decision to defer payment on War debt installment.
<b>Lithuania</b>	
Sept. 29, 1924	Agreement to reschedule war debt with the United States.
June 15, 1934	Government notifies US of decision to defer payment on War debt installment.
<b>New Zealand</b>	
December 1929	Currency parity with British Sterling is abandoned.
July 1932	Suspension of war debt payments to the UK following the Lausanne Conference.
January 20, 1933	Depreciation by 25% vis-à-vis British Sterling.
<b>Poland</b>	
November 14, 1924	Agreement to reschedule war debt with the United States.
July 1932	Control on foreign exchanges.
June 15, 1934	Government notifies US of decision to defer payment on War debt installment.

Table A.1. Chronology of Events Leading Up to the Defaults of 1934 (concluded)

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<b>Portugal</b>	
June 3, 1924	Introduction of foreign exchange controls.
December 31, 1926	Agreement to reschedule war debt with the United States.
January 1, 1932	Suspension of fixed exchange rate to British Sterling.
<b>Romania</b>	
October 19, 1925	Agreement to reschedule war debt with the United Kingdom.
December 4, 1925	Agreement to reschedule war debt with the United States.
August 1933	Transfer moratorium declared.
September 1933	Negotiation with private foreign bondholders to discuss debt service reduction.
July 1934	Foreign debt agreement with private creditors reached.
<b>United Kingdom</b>	
June 19, 1923	Agreement to reschedule war debt with the United States.
Sept. 21, 1931	Abandonment of gold standard.
June 1934	Government notifies US of decision to defer payment on War debt installment June 15.
<b>United States</b>	
June 20, 1931	Hoover Moratorium on payments of WWI and other War debts, including interest payments. Approved by Congress in December.
November 1932	The US refuses postponement of war debt payments due December 15. France and the UK had made such a request.
December 15, 1932	UK, Italy, Czechoslovakia, Finland, Greece, Latvia, Lithuania, Romania, and Yugoslavia make the scheduled payment on War debt; France, Belgium, Poland, Estonia and Hungary do not pay.
March 6, 1933	Roosevelt Proclamation resulting in embargo on gold and establishment of foreign exchange controls. Bank holiday.
March 9, 1933	Suspension of gold convertibility.
April 5, 1933	Compulsory surrender of gold (more than \$100) held by individuals.
June 15, 1933	The governments of Britain, Czechoslovakia, Italy, Latvia, Lithuania, and Romania do not make full war debt payments to the United States and offer symbolic token payments instead.
January 30, 1934	Gold Reserve Act: Abrogation of the gold clause.
January 31, 1934	Devaluation of 40.94%: from 1 troy ounce of gold = 20.67 US dollars to 1 troy ounce of gold = 35.00 US dollars.
June 1934	Places embargo on export of silver.
<b>Yugoslavia</b>	
May 3, 1926	Agreement to reschedule war debt with the United States.
August 9, 1927	Agreement to reschedule war debt with the United Kingdom.
October 1931	Control on foreign exchanges.
March 1932	Moratoria on external commercial debt payments.
April 1932	Moratoria on external public debt service.
October 1932	Default on two loans.
June 1934	Government notifies US of decision to defer payment on war debt installment June 15.

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Table A2. Debt Relief in 1934: Extension of Table 1 and Data Sources

	<i>Total to US and UK</i>		<i>Debt relief to GDP (in %)</i>		Central government debt in US\$, 1934	External debt in US\$, 1934	Population	<i>Debt relief to</i>	<i>Debt relief to</i>	<i>Debt relief</i>
	Debt outstanding in US\$ (w/ arrears)	Nominal GDP US\$, 1934	Face value (upper bound)	Present value (lower bound)				<i>central gov.</i> <i>debt (FV, in %)</i>	<i>external debt</i> <i>(FV, in %)</i>	<i>per capita</i> <i>in US\$</i>
United Kingdom	4,714,345,235	19,264,825,087	24.5	19.5	38,684,470,821	5,128,585,559	46,666,000	12.2	91.9	101.0
France	7,342,122,972	14,075,257,038	52.2	25.1	21,041,780,305	.	41,950,000	34.9	.	175.0
Italy	3,133,049,808	8,615,540,538	36.4	11.5	12,951,015,107	.	42,093,000	24.2	.	74.4
Belgium	478,061,010	11,583,547,147	4.1	2.7	11,124,315,725	4,235,226,688	8,262,000	4.3	11.3	57.9
Poland	243,356,167	.	.	.	955,633,270	.	29,771,000	25.5	.	8.2
Czechoslovakia	165,409,455	.	.	.	1,644,385,780	343,973,694	14,282,000	10.1	48.1	11.6
Yugoslavia	208,197,822	.	.	.	679,605,516	576,571,960	15,228,000	30.6	36.1	13.7
Romania	204,719,173	.	.	.	20,425,162,907	.	14,924,000	1.0	.	13.7
Greece	132,174,148	304,405,322	43.4	21.4	400,185,812	300,244,594	6,688,000	33.0	44.0	19.8
Austria	23,822,492	1,387,212,440	1.7	1.6	660,578,872	451,723,102	6,760,000	3.6	5.3	3.5
Estonia	19,511,429	.	.	.	22,160,099	20,371,757	1,126,000	88.0	95.8	17.3
Finland (fully repaid)	8,711,996	3,942,561,336	0.2	0.2	73,922,766	51,185,034	3,549,000			
Latvia	13,658,403	.	.	.	16,054,926	13,958,988	1,950,000	85.1	97.8	7.0
Lithuania	6,650,080	.	.	.	.	.	.	.	.	.
Hungary	2,086,096	.	.	.	454,610,034	376,906,830	8,919,000	0.5	0.6	0.2
<i>Australia</i>	337,777,250	5,424,000,000	6.2	.	4,701,538,462	2,281,538,462	6,682,000	7.2	14.8	50.6
<i>New Zealand</i>	110,966,579	1,053,955,882	10.5	.	2,274,283,009	1,112,388,535	1,552,000	4.9	10.0	71.5
<i>Portugal</i>	99,459,373	969,163,822	10.3	.	326,982,585	149,413,500	7,127,000	30.4	66.6	14.0
<b>Averages</b>			<b>21.0</b>					<b>24.71</b>	<b>43.52</b>	<b>39.96</b>

Notes: The list of sources is shown on the next page. Australia, New Zealand and Portugal are in italics since they only owed debt to the UK.

## List of Sources to Table A.2

*War debt amounts:* Debt amounts owed to the US are from the Annual Report of the Secretary of the Treasury (1935, pp. 391), which covers the fiscal year of 1934. The war debt figures therein are given for Nov 15, 1934. We add to this the amount of arrears, i.e. overdue payments under the debt restructuring agreements of the 1920s. Debt amounts owed to the UK are from the Moody's Manual of Investments and Securities Rating Service: Foreign and American Government Securities, 1935, p. 1927. Debt figures are given for March 31, 1934, plus arrears. To compute present values (column 4) we use the terms shown in the original loan documents, as reprinted in Moulton and Pasvolsky (1932), and using a 5% annual rate (following their approach). Debt under the broad category of WWI debt includes, especially for Eastern Europe, debts taken on after the war in connection with reconstruction. The breakdown is given for each debtor country in Reinhart and Rogoff (2014). Further good sources on WWI debt amounts include Bailey (1950), Lloyd (1934) and United Nations (1948).

*Population:* Data on population size are from Mitchell for Estonia and Latvia. For the remaining countries: Maddison-Project, <http://www.ggdgc.net/maddison/maddison-project/home.htm>, 2013 version.

*Debt stocks:* total and external public debt come from following sources: France, Czechoslovakia, Yugoslavia, Estonia, and Latvia: Moody's Manual of Investments and Securities Rating Service: Foreign and American Government Securities (1934); Austria, Australia, Finland, Greece, Hungary, Poland, Romania, United Kingdom: League of Nations; Italy: Francese and Pace (2008); Belgium: BNB, Centre d'études économiques de la KUL; New Zealand: Statistics New Zealand, Portugal: Estadísticas Históricas Portuguesas.

*Exchange rates:* exchange rates are from "Historical Statistics of the United States" and United Nations (1948).

*Nominal GDP:* for Australia: Global Financial Data and Haig (2001), 1852-1948; Austria, Global Financial Data, 1924-1937; Belgium, 1835-2005, BNB, Centre d'études économiques de la KUL; Finland and France, Historical National Accounts Database (HNAD), 1860-2001 and 1815-1938, respectively <http://www.rug.nl/research/ggdgc/data/historical-national-accounts>; Greece, Kostelenos (2003), 1830-1939; Italy, Francese and Pace (2008) 1861-2006; New Zealand: Statistics New Zealand, 1900-1947; Portugal: Estadísticas Históricas Portuguesas, 1851-1952; US and UK from Measuring Worth, <http://www.measuringworth.com/datasets/>.

Table A.3 United States: The Abrogation of the Gold Clause and Devaluation, January 30-31, 1934

Fiscal Year	Debt outstanding	Dollar devaluation relative to gold		Nominal GDP	Debt relief (haircut/GDP)
		(haircut, percent)	Amount of haircut		
30.06.1934	27,053,141,414	40.94	11,075,556,095	1934	66,800,000,000
30.06.1933	22,538,672,560	40.94	9,227,332,546	1933	57,200,000,000

*Sources:* Debt amounts from [http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt\\_histo3.htm](http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt_histo3.htm) (Historical Debt Outstanding - Annual 1900 – 1949). For devaluation details see Pick and Sedillot (1971, p. 110). Nominal GDP from Measuring Worth, <http://www.measuringworth.com/usgdp/>.

*Notes:* January 1934 devaluation details are: from 1 troy ounce of gold = 20.67 US dollars to 1 troy ounce of gold = 35.00 US dollars. We provide the debt and nominal GDP figures for 1933 and 1934 to bracket the size of the debt reduction. According to the League of Nations, the United States had no foreign currency debt in 1934, as such, there is no offsetting "cost" from a higher burden of foreign currency debt following the devaluation. See also Kroszner (1999).

## Appendix B: Debt Relief in Emerging Markets 1978-2010: Methods and Data

### Note on Methodology: Computing Cumulative Haircuts in EMs 1978-2010 (Cruces/Trebesch 2013):

The cumulative effective haircut can be interpreted as the compound losses of a passive investor who held a face value-weighted basket of all the country's securities and whose debts are restructured sequentially in each deal up to and including the final deal. For the final deal  $i$  this measure is:

$$(1) \text{ Cumulative Effective } H^i = 1 - \prod_{j=1}^{J^i} WCR^{i,j}$$

Where  $WCR_{SZ}^{i,j}$  is the wealth conservation ratio in restructuring  $j$ , and  $J^i-1$  is the number of non-final deals preceding final deal  $i$ .  $WCR^{i,j}$  is defined as:

$$(2) WCR^{i,j} = \frac{\text{Debt Affected}^{i,j}}{\text{Total Debt}_{t-1}^i} (1 - H^{ij}) + \left(1 - \frac{\text{Debt Affected}^{i,j}}{\text{Total Debt}_{t-1}^i}\right) = 1 - \text{Effective } H^{ij}$$

The wealth conservation ratio is 1 minus the effective haircut and draws on GFD data to private creditors.

To calculate debt relief for a full spell (up to and including the final restructuring),  $DR_i$ , we calculate the following two ratios, which we refer to as Method 1 and 2, respectively:

$$(3) DR_{i,METHOD 1} = \text{Cumulative Effective } H^i \frac{\text{Debt Affected}^{i,j}}{\text{Nominal GDP}_i}$$

Method 2, rather than scaling by final period GDP (which could bias downward the relative importance of earlier restructuring deals assuming nominal GDP is rising over the spell), would be:

$$(4) DR_{i,METHOD 2} = \text{Cumulative Effective } H^i \sum_{j=1}^{J^i} \frac{\text{Debt Affected}^j}{\text{Nominal GDP}_j}$$

A sample calculation for Argentina 1982-1993 is available upon request.

### Discounting Methodology for EM Haircuts:

Cruces and Trebesch (2013) use a procedure to impute market rates for each restructuring, so as to mimic the discounting approach with “exit yields” proposed by Sturzenegger and Zettelmeyer (2008), even if no liquid secondary market prices exist. The imputed discount rates combine information on the debtor country at the time of the restructurings with information on the global level of risk aversion (the credit risk premium). Quoting from Cruces and Trebesch (2013, p. 91): “the procedure can be summarized as follows. We start from secondary market yields on low-grade US corporate bonds which we group by credit rating category. We then convert these corporate yields into discount rates on sovereign debt by first linking corporate and sovereign secondary market yields and then imputing yield levels for each sovereign based on its credit rating at the time of restructuring. In the spirit of Sturzenegger and Zettelmeyer, we then use these imputed discount rates at the exit from default to discount the cash flows of the old and new debt.” The Appendix of that paper provides a very detailed summary of the methodology and data used.



Table B.1 Middle-High Income External Debt Restructuring Episodes, 1978-2010

Country / Case	Month/ Year	Debt affected (m US\$)	Haircut (Cruces/ Trebesch)	GDP in millions US\$	GDP full episode year (Method 1)	Total external debt in mn US\$	Public external debt in mn US\$	Populatio n in mn	Debt affected/ GDP	Full restructuring episode	Full episode haircut (C&T)	Full episode debt relief to GDP, in % (Method 1)	Full episode debt relief to GDP, in % (Method 2)	Full episode debt relief to GDP, in % (Method 3)	Full episode debt relief to GDP, in % (Method 4)	Full episode debt relief to total external debt, in %	Full episode debt relief to public ext. debt, in %	Full episode debt relief per capita, in US\$
Algeria	03 / 1992	1,457	0.087	49,217	1996	28,490	26,256	26.9	3.0	1991-1996	0.1	0.5	0.5	2.0	2.0	0.8	0.9	9
Algeria	07 / 1996	3,200	0.235	46,941		33,052	31,313	29.3	6.8									
Argentina	08 / 1985	9,900	0.303	88,193	1993	49,061	26,904	29.9	11.2	1982-1993	0.5	13.7	24.0	n.a.	n.a.	56.1	80.1	1,020
Argentina	08 / 1987	29,515	0.217	108,731		52,688	41,196	30.8	27.1									
Argentina	04 / 1993	28,476	0.325	236,520		68,606	47,871	33.5	12.0									
Argentina	04 / 2005	60,572	0.768	181,357	2005	164,915	100,056	38.3	33.4	2001-2005	0.4	14.2	14.2	n.a.	n.a.	15.6	25.7	672
Bosnia and Herzegovina	12 / 1997	1,300	0.896	5,281	1998	n.a.	n.a.	3.5	24.6	1992-1997	0.9	22.1	22.1	n.a.	n.a.	n.a.	n.a.	334
Brazil	02 / 1983	4,452	-0.098	146,702	1994	94,429	53,271	127.5	3.0	1983-1994	0.4	9.0	14.3	6.7	8.3	41.3	59.9	333
Brazil	01 / 1984	4,846	0.017	145,992		99,022	60,604	130.5	3.3									
Brazil	09 / 1986	6,671	0.192	268,846		104,174	72,998	136.2	2.5									
Brazil	11 / 1988	62,100	0.184	326,902		109,645	81,073	144.5	19.0									
Brazil	11 / 1992	9,167	0.270	390,586		121,331	85,944	152.2	2.3									
Brazil	04 / 1994	43,257	0.293	546,487		144,595	92,053	157.0	7.9									
Bulgaria	06 / 1994	7,910	0.563	8,013	1994	12,178	9,693	8.5	98.7	1990-1994	0.6	55.6	55.6	55.6	55.6	36.6	45.9	526
Chile	11 / 1983	2,169	0.007	21,016	1990	n.a.	n.a.	11.5	10.3	1983-1990	0.4	24.6	35.6	17.7	23.3	n.a.	n.a.	667
Chile	01 / 1984	1,160	0.084	20,437		n.a.	n.a.	11.7	5.7									
Chile	04 / 1986	6,007	0.317	18,839		n.a.	n.a.	12.1	31.9									
Chile	06 / 1987	5,901	0.143	22,219		n.a.	n.a.	12.3	26.6									
Chile	12 / 1990	6,494	0.170	33,546		n.a.	n.a.	13.0	19.4									
Costa Rica	09 / 1983	609	0.394	3,147	1990	3,767	2,514	2.5	19.4	1983-1990	0.8	33.7	43.4	29.0	30.8	44.7	59.9	691
Costa Rica	05 / 1985	440	0.356	3,923		4,112	3,293	2.6	11.2									
Costa Rica	05 / 1990	1,384	0.719	5,710		4,676	3,625	3.0	24.2									
Croatia	07 / 1996	858	0.110	23,380	1996	n.a.	n.a.	4.7	3.7	1992-1996	0.1	0.4	0.4	0.4	0.7	n.a.	n.a.	20
Dominican Rep.	02 / 1986	823	0.499	7,883	1994	3,573	2,762	6.5	10.4	1982-1994	0.7	9.9	13.3	n.a.	n.a.	32.9	42.2	196
Dominican Rep.	08 / 1994	1,087	0.505	14,094		4,957	3,889	7.7	7.7									
Dominican Rep. (Bond)	05 / 2005	1,100	0.047	33,533	2005	7,812	6,643	9.2	3.3	2005	0.0	0.1	0.1	n.a.	n.a.	0.2	0.3	2
Dominican Rep (Bank)	10 / 2005	180	0.113	33,533					0.5									
Dominica	09 / 2004	144	0.540	361	2005	307	225	0.1	39.9	2003-2005	0.5	21.6	21.6	21.6	21.6	25.3	34.6	1,111
Ecuador	10 / 1983	970	0.063	15,431	1995	7,808	3,989	8.3	6.3	1982-1995	0.5	27.8	31.2	n.a.	n.a.	58.9	83.1	660
Ecuador	08 / 1984	350	0.057	16,423		7,693	5,644	8.5	2.1									
Ecuador	12 / 1985	4,224	0.154	19,206		8,400	6,650	8.7	22.0									
Ecuador	02 / 1995	7,170	0.422	23,427		15,011	10,495	11.1	30.6									
Ecuador	08 / 2000	6,700	0.383	18,685	2000	16,075	13,329	12.3	35.9	1999-2000	0.3	12.0	12.0	n.a.	n.a.	13.9	16.8	182
Ecuador	06 / 2009	3,190	0.677	57,859	2009	15,818	10,095	14.5	5.5	2008-2009	0.5	2.9	2.9	n.a.	n.a.	10.6	16.7	116
Gabon	12 / 1987	39	0.079	3,535	1994	1,944	1,431	0.8	1.1	1986-1994	0.1	0.3	0.3	0.8	0.8	0.4	0.5	12
Gabon	05 / 1994	187	0.162	4,265		3,861	2,933	1.1	4.4									
Grenada	11 / 2005	210	0.339	695	2005	433	347	0.1	30.2	2004-2005	0.3	10.2	10.2	n.a.	n.a.	16.4	20.5	693
Jamaica	09 / 1978	63	0.022	n.a.	1990	1,698	988	2.1	n.a.	1978-1993	0.5	16.1	24.4	14.7	17.8	24.4	24.4	24
Jamaica	04 / 1979	149	0.035	n.a.		1,438	1,093	2.1	n.a.									
Jamaica	06 / 1981	89	0.152	2,817		1,926	1,444	2.1	3.2									
Jamaica	06 / 1984	165	0.181	2,119		3,472	2,483	2.2	7.8									
Jamaica	09 / 1985	369	0.317	1,993		3,616	2,665	2.3	18.5									
Jamaica	05 / 1987	285	0.328	2,672		4,238	3,308	2.3	10.7									
Jamaica	06 / 1990	332	0.440	4,663		4,545	3,731	2.4	7.1									
Jordan	12 / 1993	1,289	0.546	5,532	1993	7,967	7,078	3.7	23.3	1989-1993	0.2	5.3	5.3	n.a.	n.a.	3.7	4.1	78
Macedonia, FYR	03 / 1997	229	0.346	3,735	1997	1,818	856	2.0	6.1	1992-1997	0.3	2.1	2.1	2.1	2.9	4.4	9.2	40
Mexico	08 / 1983	18,800	-0.002	172,160	1990	86,275	51,745	73.4	10.9	1982-1990	0.4	25.9	36.2	13.1	19.5	78.1	105.1	942
Mexico	03 / 1985	28,600	0.022	215,443		95,017	69,913	76.4	13.3									
Mexico	08 / 1985	20,100	0.054	215,443		95,017	69,913	76.4	9.3									
Mexico	03 / 1987	52,300	0.181	163,581		101,083	76,020	79.4	32.0									
Mexico	03 / 1988	3,671	0.563	200,119		109,653	84,542	81.0	1.8									
Mexico	02 / 1990	54,300	0.305	287,803		94,016	76,293	84.3	18.9									

Table B.1 (continued). Middle-High Income External Debt Restructuring Episodes, 1978-2010

Country / Case	Month/ Year	Debt affected (m US\$)	Haircut (Cruces/ Trebesch)	GDP in millions US\$	GDP full episode year (Method 1)	Total external debt in mn US\$	Public external debt in mn US\$	Populatio n in mn	Debt affected/ GDP	Full restructuring episode	Full episode haircut (C&T)	Full episode debt relief to GDP, in % (Method 1)	Full episode debt relief to GDP, in % (Method 2)	Full episode debt relief to GDP, in % (Method 3)	Full episode debt relief to GDP, in % (Method 4)	Full episode debt relief to total external debt, in %	Full episode debt relief to public ext. debt, in %	Full episode debt relief per capita, in US\$
Panama	10 / 1985	579	0.120	5,402	1996	4,365	3,181	2.2	10.7	1983-1996	0.4	20.7	22.9	16.9	19.8	32.9	52.3	724
Panama	08 / 1994	452	0.151	7,734		6,712	3,644	2.7	5.8									
Panama	05 / 1996	3,936	0.349	9,322		6,105	3,788	2.8	42.2									
Peru	01 / 1980	340	-0.046	20,649	1997	9,417	6,165	16.9	1.6	1980-1997	0.6	12.2	13.8	11.4	11.5	27.9	40.4	305
Peru	07 / 1983	380	0.063	19,291		10,871	7,127	18.2	2.0									
Peru	03 / 1997	10,600	0.639	59,214		29,033	20,293	24.4	17.9									
Poland	04 / 1982	1,957	0.406	65,187	1994	n.a.	n.a.	35.9	3.0	1981-1994	n.a.	n.a.	15.1	15.1	17.7	n.a.	n.a.	336
Poland	11 / 1982	2,225	0.629	65,187		n.a.	n.a.	35.9	3.4									
Poland	11 / 1983	1,192	0.525	75,406		n.a.	n.a.	36.2	1.6									
Poland	07 / 1984	1,390	0.269	75,507		n.a.	n.a.	36.6	1.8									
Poland	09 / 1986	1,970	0.375	73,677		n.a.	n.a.	37.2	2.7									
Poland	07 / 1988	8,441	0.244	68,612		n.a.	n.a.	37.7	12.3									
Poland	07 / 1989	206	0.120	66,895		n.a.	n.a.	37.8	0.3									
Poland	10 / 1994	13,531	0.490	103,683		n.a.	n.a.	38.5	13.1									
Romania	12 / 1982	1,598	0.329	54,819	1983	10,447	8,071	22.4	2.9	1981-1986	0.2	0.9	0.9	1.5	1.6	5.1	6.5	21
Romania	06 / 1983	567	0.317	47,915		10,003	7,797	22.5	1.2									
Romania	09 / 1986	800	0.123	51,765	1986	7,008	5,805	22.8	1.5									
Russia	12 / 1997	30,500	0.262	404,938	2000	n.a.	n.a.	148.2	7.5	1991-2000	0.5	13.1	11.3	9.6	11.1	n.a.	n.a.	230
Russia (GKOs)	03 / 1999	4,933	0.460	195,907		n.a.	n.a.	147.7	2.5									
Russia (MinFin3)	02 / 2000	1,307	0.515	259,716		n.a.	n.a.	147.2	0.5									
Russia (PRINs/IANs)	08 / 2000	31,943	0.508	259,716		n.a.	n.a.	147.2	12.3									
Serbia & Montenegro	07 / 2004	2,700	0.709	23,537	2004	14,260	8,277	7.5	11.5	2003-2004	0.7	8.1	8.1	8.1	8.4	13.4	23.1	256
Seychelles	02 / 2010	320	0.562	973	2010	1,707	708	0.1	32.9	2008-2010	0.6	18.5	18.5	18.5	18.7	10.5	25.4	2,060
Slovenia	06 / 1995	812	0.033	20,971	1995	n.a.	n.a.	2.0	3.9	1992-1996	0.0	0.1	0.1	0.1	0.5	n.a.	n.a.	13
South Africa	03 / 1987	10,900	0.085	85,792	1993	n.a.	n.a.	32.1	12.7	1985-1993	0.4	6.8	9.2	2.9	2.9	n.a.	n.a.	263
South Africa	10 / 1989	7,500	0.127	95,979		n.a.	n.a.	33.7	7.8									
South Africa	09 / 1993	5,000	0.220	130,448		n.a.	n.a.	36.7	3.8									
Trinidad & Tobago	12 / 1989	446	0.155	4,323	1989	n.a.	n.a.	1.2	10.3	1988-1989	0.2	1.6	1.6	1.6	2.0	n.a.	n.a.	57
Turkey	06 / 1979	429	0.222		1982	14,855	6,490	42.0		1978-1982	0.3	1.8	0.9	1.1	1.5	9.6	18.0	37
Turkey	08 / 1979	2,269	0.195			14,855	6,490	42.0										
Turkey	08 / 1981	100	0.086	95,496		19,131	15,040	43.9	0.1									
Turkey	03 / 1982	2,269	0.170	86,766		19,236	15,272	44.9	2.6									
Uruguay	07 / 1983	575	0.007	5,609	1991	n.a.	n.a.	3.0	10.3	1983-1991	0.5	22.0	34.3	n.a.	n.a.	n.a.	n.a.	892
Uruguay	07 / 1986	1,958	0.243	6,470		n.a.	n.a.	3.0	30.3									
Uruguay	03 / 1988	1,770	0.203	8,375		n.a.	n.a.	3.0	21.1									
Uruguay	01 / 1991	1,610	0.263	12,376		n.a.	n.a.	3.1	13.0									
Uruguay	05 / 2003	3,127	0.098	12,046	2003	n.a.	n.a.	3.3	26.0	2003	0.1	2.1	2.1	n.a.	n.a.	n.a.	n.a.	74
Venezuela	02 / 1986	20,307	0.099	60,878	1990	35,344	17,748	17.3	33.4	1983-1990	0.4	48.2	41.6	19.6	27.9	68.4	105.9	1,278
Venezuela	09 / 1988	20,338	0.043	60,379		34,577	25,015	18.3	33.7									
Venezuela	12 / 1990	19,585	0.367	48,393		32,380	25,170	19.3	40.5									
<b>Averages</b>		<b>7,889</b>	<b>0.270</b>	<b>79,299</b>		<b>33,557</b>	<b>23,310</b>	<b>33.8</b>	<b>13.8</b>		<b>0.39</b>	<b>13.6</b>	<b>15.7</b>	<b>11.7</b>	<b>13.3</b>	<b>25.3</b>	<b>36.1</b>	<b>425</b>

*Sources:* Individual episodes dates, debt affected, haircut, full episode haircut from Cruces and Trebesch (2013); full episode haircut not previously published. GDP in US dollars from World Economic Outlook, April 2013; full restructuring episode and total public debt from Reinhart and Rogoff (2009, 2011); total external debt, public external debt and population size from World Bank/World Development Indicators, January 2015. Debt relief calculations from the authors, where debt relief as % of debt outstanding always uses lagged debt stocks (T-1, the year prior to the final restructuring) and Method 2 (our baseline approach, see above)

## Appendix C: Stylized Facts / Regression Analysis: Supplementary Material and Data

Table C.1 List of Variables and Sources

### Dependent variables:

#### *GDP levels & growth rates (real, per capita):*

- 1978-2010: Total Economy Database. Gaps filled with data from WDI database 2014 (WB).
- Interwar: Maddison and Total Economy Database.

#### *Sovereign ratings:*

- 1978-2010: Institutional Investor Magazine. Annual average ratings.  
<http://www.institutionalinvestor.com/Research/4142/Overview.html>.
- Interwar: Moody's ratings from Moody's Manuals of Foreign Securities and Gaillard (2012).

#### *Debt stocks:*

- Time series on total, external, and domestic central government are from Reinhart and Rogoff (2009, 2011), including calculations to GDP. Total debt/GDP is from Abbas et al. (2010). See also sources cited therein. External Debt/GNI for emerging markets is from IDS database 2014 (WB).

#### *Debt service:*

- 1978-2010: All debt service numbers and ratios to GDP and exports from IDS database 2014 (WB)
- Interwar: Debt service figures for Lithuania, Romania and Yugoslavia come from Moody's Manual of Foreign Government Securities (various issues). Debt service figures for all other countries (Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, Colombia, Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Mexico, New Zealand, Norway, Peru, Poland, Portugal, Spain, Sweden, Switzerland, Thailand, Turkey, UK, US) are from the League of Nations (various issues), and United Nations (1948).

#### *Interwar Nominal GDP (to compute debt service to GDP)*

- For 1934 defaulters see sources to Table A.2. In addition (counterfactual): For Argentina, Australia, Brazil, Bulgaria, Canada, Denmark, Finland, Ireland, Japan, Norway, Sweden, Switzerland, Yugoslavia we use Mitchell (1998 and 2003). For Austria and Germany Global Financial Data. For Mexico and Peru: Oxford Latin America Database <http://moxlad-staging.herokuapp.com/home/en>. Nominal GDP data for the remaining countries come from following sources: Belgium: BNB, Centre d'études économiques de la KUL, Colombia: Junguito and Rincón (2004), France: Historical National Accounts Database (HNAD), Greece: Kostelenos (2003); Hungary: Dincecco and Prado (2013); Italy: Francese and Pace (2008); New Zealand: Statistics New Zealand; Portugal: Instituto Nacional Estadística; Sweden: Fregert and Gustafsson, (2008); Spain: Dincecco and Prado (2013); Turkey: Turkstat; United Kingdom: Williamson (2015); United States: Johnston and Williamson (2015).

*Interwar Revenues (to compute debt service to revenues):*

- For Estonia, Ireland, Lithuania, and Spain we use Moody's Manual of Foreign Government Securities (various issues), For Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, Colombia, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Japan, Mexico, New Zealand, Norway, Peru, Poland, Portugal, Sweden, Switzerland, Thailand, Turkey, UK, US, Yugoslavia we use Mitchell. Total Debt Service to revenue ratios are based on own calculations besides for the following country and years: Canada, 1921-1925; Chile 1920-1939; Hungary 1927-1929; Mexico: 1920-1925; Hungary: 1927-1939. For these spells we use Mauro et al. (2013).

Control variables:

*Internal and external military conflicts:* Correlates of War dataset (dummy variables on Intra-state Wars, Inter-state wars). Data and definitions: <http://www.correlatesofwar.org/data-sets/COW-war>.

*Currency crises and banking crises:* Reinhart and Rogoff (2009) and updates at [www.carmenreinhardt.com](http://www.carmenreinhardt.com), year dummies.

*Inflation:* Reinhart and Rogoff (2009) and updates at [www.carmenreinhardt.com](http://www.carmenreinhardt.com), annual yoy change.

*Political shocks:* number of major government crises, revolutions and riots from the Arthur Banks dataset 2014. Data and definitions: <http://www.databanksinternational.com>.

Table C.2 Dispersion of GDP and Rating Performance around Debt Relief Events (T)

## Panel A: Dispersion of real per capita GDP levels around 1934 default/relief

Year	Mean	Max	Min	25th percentile	Median	75th percentile	standard deviation
-5	1.092	1.329	0.903	0.981	1.069	1.163	0.123
-4	1.055	1.257	0.881	0.970	1.031	1.124	0.113
-3	1.002	1.153	0.860	0.916	0.994	1.075	0.097
-2	0.963	1.097	0.871	0.918	0.946	1.019	0.062
-1	0.986	1.045	0.922	0.960	0.994	1.004	0.031
<b>T (1934)</b>	1.000	1.000	1.000	1.000	1.000	1.000	0.000
<b>1</b>	1.021	1.088	0.935	0.987	1.026	1.051	0.041
<b>2</b>	1.060	1.225	0.854	1.015	1.064	1.090	0.081
<b>3</b>	1.117	1.280	0.956	1.073	1.109	1.180	0.084
<b>4</b>	1.158	1.370	0.979	1.065	1.133	1.248	0.118
<b>5</b>	1.201	1.436	0.980	1.115	1.176	1.286	0.135

## Panel B: Dispersion of real per capita GDP levels around EM Debt Restructurings, 1978-2010

Year	Mean	Max	Min	25th percentile	Median	75th percentile	standard deviation
-5	0.968	1.266	0.454	0.901	0.951	1.050	0.167
-4	0.952	1.193	0.460	0.912	0.954	1.030	0.141
-3	0.938	1.158	0.476	0.894	0.955	0.988	0.128
-2	0.940	1.112	0.483	0.903	0.962	0.985	0.113
-1	0.965	1.016	0.817	0.957	0.975	0.990	0.042
<b>T (restruct.)</b>	1.000	1.000	1.000	1.000	1.000	1.000	0.000
<b>1</b>	1.031	1.112	0.959	1.007	1.024	1.067	0.037
<b>2</b>	1.061	1.179	0.954	1.029	1.044	1.098	0.059
<b>3</b>	1.086	1.254	0.911	1.041	1.062	1.145	0.090
<b>4</b>	1.095	1.343	0.833	1.034	1.070	1.139	0.126
<b>5</b>	1.106	1.455	0.727	1.001	1.073	1.218	0.183

## Panel C: Dispersion of Ratings (IIR) around EM Debt Restructurings, 1978-2010

Year	Mean	Max	Min	25th percentile	Median	75th percentile	standard deviation
-5	1.096	2.305	0.422	0.727	0.944	1.399	0.470
-4	1.047	2.028	0.440	0.798	0.928	1.339	0.384
-3	0.991	1.576	0.557	0.799	0.928	1.229	0.275
-2	0.985	1.597	0.621	0.806	0.928	1.160	0.251
-1	0.992	1.465	0.784	0.884	0.945	1.042	0.163
<b>T (restruct.)</b>	1.000	1.000	1.000	1.000	1.000	1.000	0.000
<b>1</b>	1.085	1.465	0.815	1.006	1.084	1.144	0.125
<b>2</b>	1.206	1.799	0.920	1.075	1.179	1.266	0.193
<b>3</b>	1.295	1.934	0.878	1.124	1.267	1.400	0.273
<b>4</b>	1.350	2.281	0.896	1.175	1.323	1.455	0.313
<b>5</b>	1.403	2.563	0.777	1.151	1.376	1.549	0.388

Table C.3 Interwar Sovereign Credit Ratings: Moody's and Fitch, 1930-1939

Country	Also defaulted on private external debt - default year(s)	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
<b>US Dollar Ratings Assigned by Moody's</b>											
Australia		Aa	Aa	Baa	Baa	Baa	Baa	A	A	Baa	Baa
Austria	1932-1933, 1938, 1940-1952	Aa	Aa	A	Baa	Baa	Ba	Ba	Ba	Ba	B
Belgium		Aa	Aa	Aa	Aa	A	A	A	A	A	A
Czechoslovakia	1938-1946	A	A	Baa	Baa	Baa	Baa	Baa	Baa	Baa	
Estonia		Ba	Ba	Ba	Ba	Ba	Baa	Baa	Baa	Baa	Baa
France		Aa	Aa	Aa	Aa	Aa	Aa	Aa	A	A	A
Germany	1932-1952	Aa	Aa	Baa	Baa	Baa	B	B	B	B	B
Greece	1932-1964	Baa	Baa	Baa	B	B	B	B	B	B	B
Hungary	1932-1937, 1941-1967	A	A	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba
Italy	1940-1946	A	A	Baa	Baa	A	A	A	Baa	Baa	Baa
Lithuania		Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba	Ba
New Zealand		Aaa	Aaa	A	Baa	Baa	A	A	A	A	A
Poland	1936-1937, 1940-1952	Baa	Baa	Baa	Baa	Baa	Baa	Baa	Ba	Ba	Ba
Portugal		Baa	Ba	Ba	Ba	Ba	Ba	Ba	B	B	B
Romania	1933-1958	B	Ba	Ba	Ba	B	B	B	B	B	B
United Kingdom		Aaa	Aaa	Aaa	Aaa	Aa	Aa	Aa	Aa	Aa	Aa
Yugoslavia	1933-1950	Ba	Ba	Ba	B	B	B	B	Ba	Ba	Ba
<b>US Dollar Ratings Assigned by Fitch</b>											
Austria	1932-1933, 1938, 1940-1952	AA	AA	A	BBB	BBB	B	B	B		
Belgium		AA	AA	A	A	A	A	A	A	A	A
Czechoslovakia	1938-1946	A	A	BBB	BBB	BBB	BBB	BBB	BBB		
Estonia		BBB	BB	B	B	B	B	B	B	BB	BB
France		AAA	AAA	AAA	AAA	AAA	AAA	AAA	A	A	A
Germany	1932-1952	AAA	A	BB	BB	BB	CCC				
Greece	1932-1964	BBB	BBB	CCC	CC	CC	CC	CC	CC	CC	CC
Hungary	1932-1937, 1941-1967	A	A	CCC	CCC	CC	CC	CC			
Italy	1940-1946	A	BBB	BBB	BBB	BBB	BBB	B	B		
Poland	1936-1937, 1940-1952	BBB	BBB	BB	BB	BB	BB	BB			
United Kingdom		AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Yugoslavia	1933- 1950	BB	BB	B	CC	CC	CC	CC	CC	CC	CC

*Sources:* Fitch Bond Books (various years), Gaillard (2012), and Moody's Manuals of Foreign Securities (various years). Default dates on private external debt from Reinhart and Rogoff (2009), updated at [www.carmenreinhardt.com](http://www.carmenreinhardt.com).

Figure C.1 Addressing Heterogeneity: Stylized Facts at the Median (and Upper and Lower Quartiles)

This figure complements the four main descriptive figures of Section 3 (“stylized facts”) by showing the evolution of real p.c. GDP, country credit ratings, debt service and debt stock ratios to GDP at the median and for the upper and lower quartile. The solid line represents the median, while the dotted lines show the 75<sup>th</sup> and 25<sup>th</sup> percentile, respectively. The upper panels (red lines) show statistics around the 1934 debt relief event, while the lower panels (green lines) show statistics around final emerging market debt restructurings. GDP and ratings are indexed at T=1. The sample of defaulting countries is the same as in Figures 3-6.

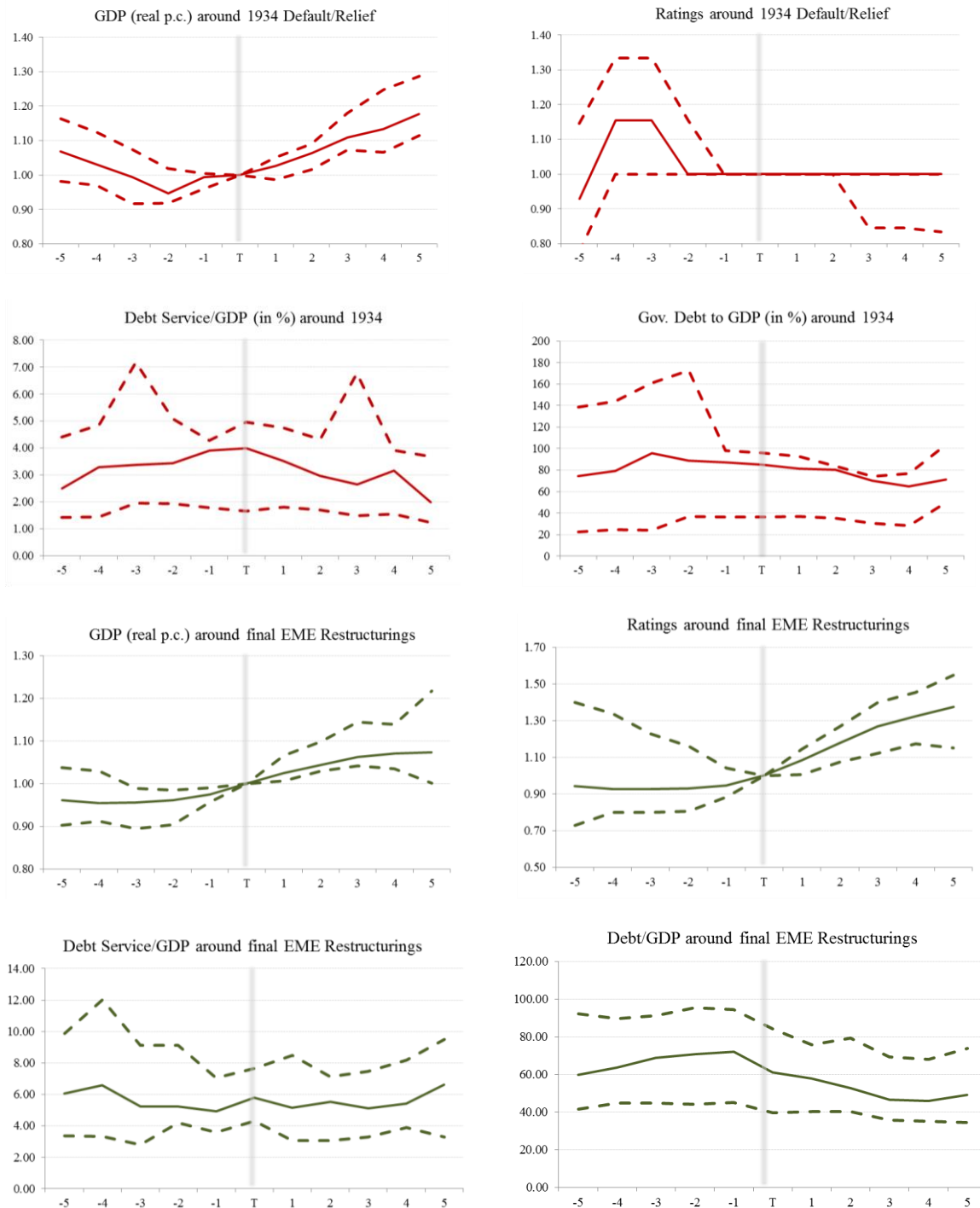
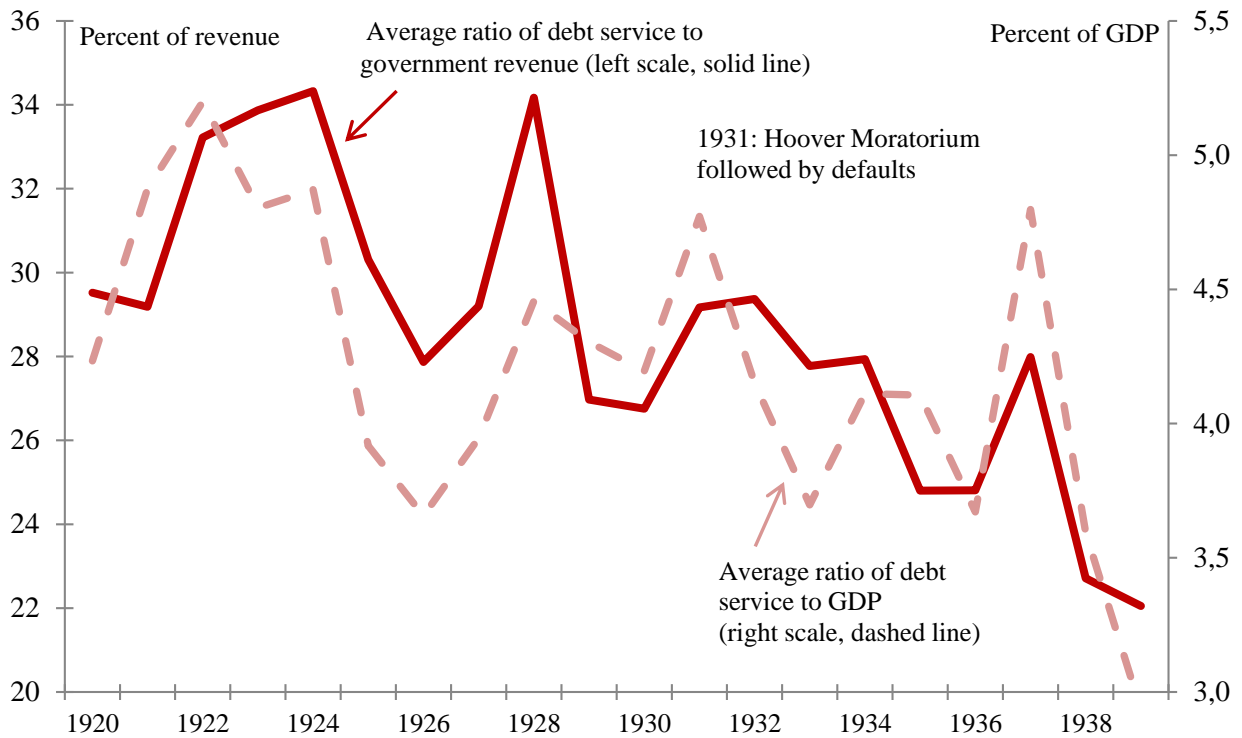


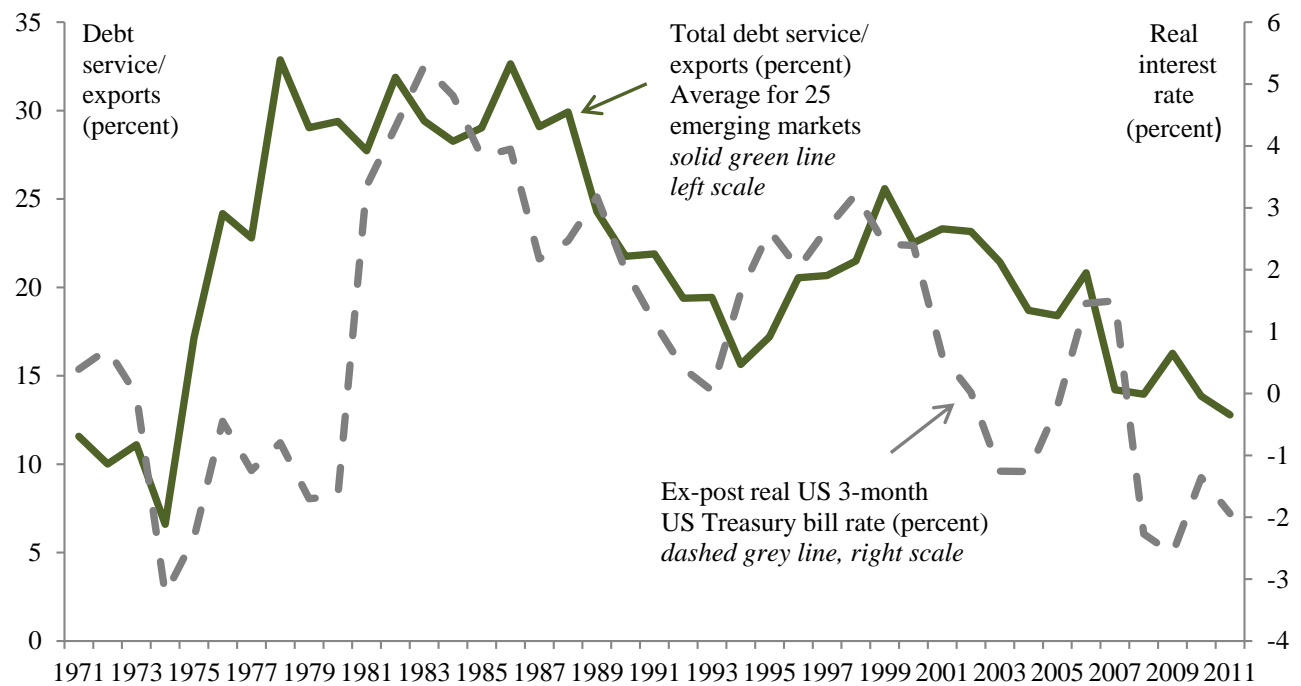
Figure C.2 Debt Service 1920-1939: Austria, Belgium, France, Germany, Greece, Italy, UK, US  
(as percent of central government revenue and as a percent of GDP)



Sources: The government debt servicing data come from the League of Nations (various years) and United Nations (1948). For nominal GDP and revenues see Table C.1 above.



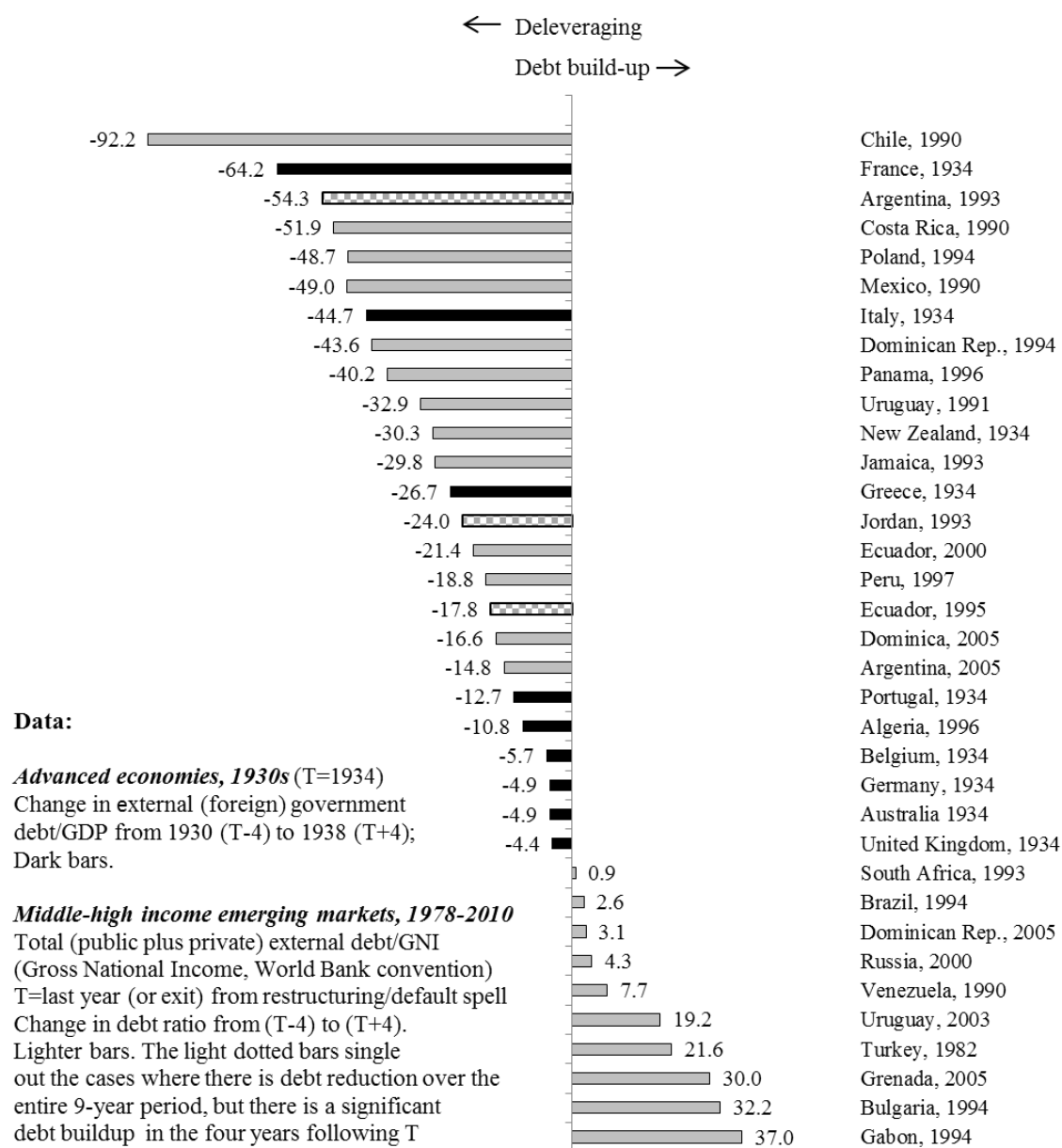
Figure C.3 Emerging Markets, 1970-2011: External Debt Servicing and US Interest Rates



*Sources:* International Debt Statistics, World Bank for the debt servicing ratios and International Financial Statistics, International Monetary Fund, for US Treasury bill 3-month real interest rates.

*Notes:* The debt service ratio to exports is a standard statistic reported by the World Bank in its work on debt.

Figure C.4 External Debt around Debt Relief Events: Advanced and Emerging Market Economies  
(change in debt to income ratio from T-4 to T+4)



Sources: Cruces and Trebesch (2013), Reinhart and Rogoff (2009, 2011), World Bank (IDS), own calculations

Figure C.5 Target vs. Counterfactual: Hoover Moratorium

This figure compares the evolution of real per capita GDP growth (residuals from a regression of annual real p.c. growth rates on a constant and country-specific dummies), country credit ratings (by Moody's, normalized to 1 in year T), debt service to government revenue (in %), and the level of public debt to GDP (in %) before and after the Hoover Moratorium (T=1931) for two groups (subject to data availability). The target group (red line) is a sample of 18 countries defaulting on the war debt towards the US and the UK (those listed in Table 1, except Finland, red line). The counterfactual is a group of European countries, which did not default namely Denmark, Finland, Ireland, Norway, Spain, Sweden, and Switzerland (dotted orange line). For sources and variable definitions see Table C.1. The corresponding figure for real per capita GDP (in levels) is shown in the main paper in Figure 8.

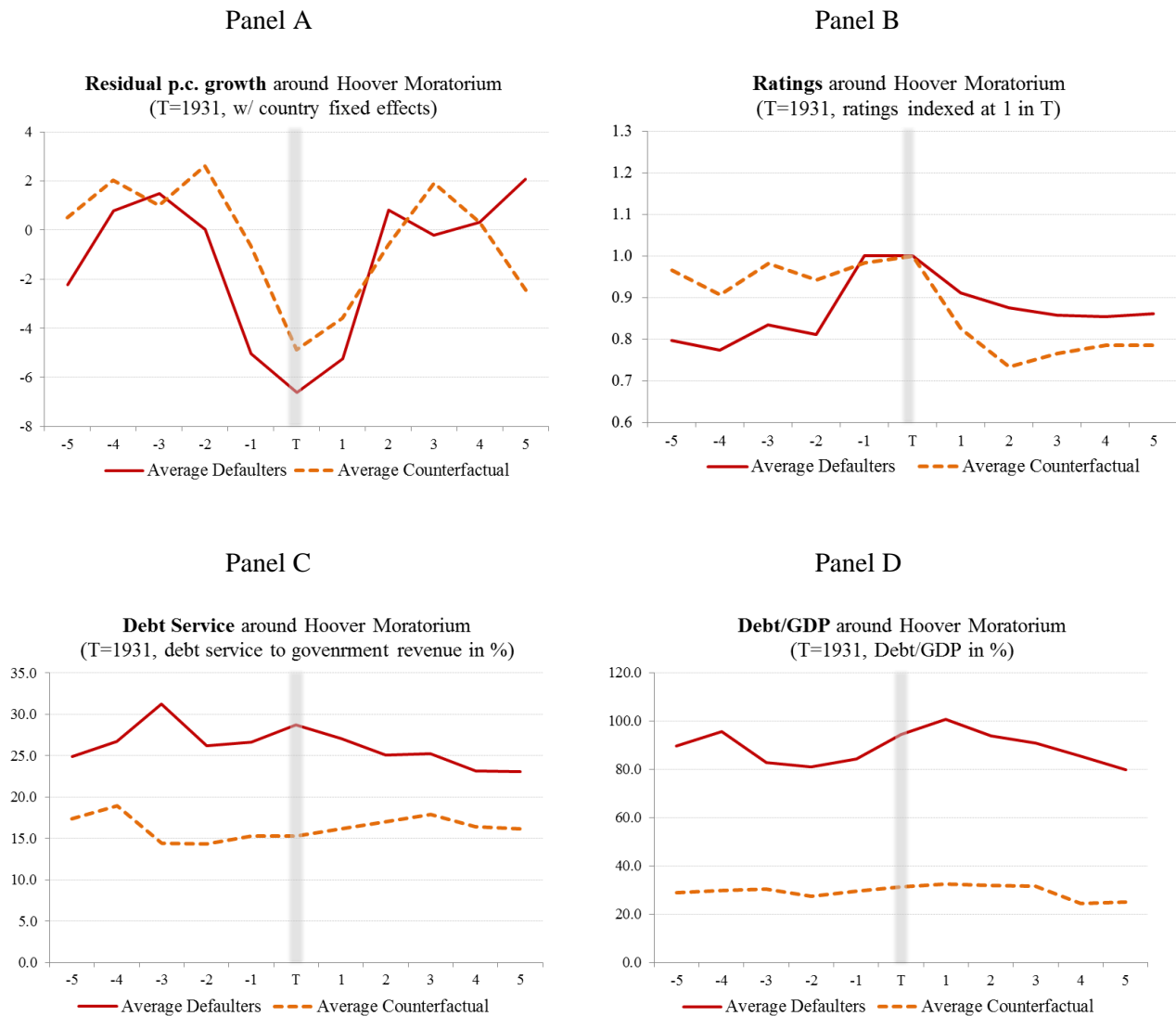


Figure C.6 Target vs. Counterfactual: 1934 Summer Defaults/Relief

This figure compares the evolution of real per capita GDP growth (residuals from a regression of annual real p.c. growth rates on a constant and country-specific dummies), country credit ratings (by Moody's, normalized to 1 in year T), debt service to government revenue (in %), and the level of public debt to GDP (in %) before and after the 1934 war debt default and associated debt write downs (T=1934) for two groups (subject to data availability). The target group (red line) is a sample of 18 countries defaulting on the war debt towards the US and the UK (those listed in Table 1, except Finland, red line). The counterfactual is a group of European countries, which did not default namely Denmark, Finland, Ireland, Norway, Spain, Sweden, and Switzerland (dotted orange line). For sources and variable definitions see Table C.1. The corresponding figure for real GDP per capita (in levels) is shown in the main paper in Figure 8.



Figure C.7 Target vs. Counterfactual: Baker Plan (1986)

This figure compares the evolution of real per capita GDP growth (residuals from a regression of annual real p.c. growth rates on a constant and country-specific dummies), country credit ratings (Institutional Investor Ratings, normalized to 1 in year T), debt service to exports (in %), and the level of public debt to GDP (in %) before and after the start of the Baker initiative (T=1986) for two groups (subject to data availability). The target group (red line) includes the 15 middle-high-income countries that were part of the Baker initiative, namely Argentina, Brazil, Bulgaria, Chile, Costa Rica, Dominican Republic, Ecuador, Jordan, Mexico, Morocco, Panama, Peru, Poland, Uruguay and Venezuela (green line). The counterfactual group includes 14 middle-high-income developing countries that did not default nor received debt relief in the late 1980s or 1990s, namely China, Colombia, Czech Republic, Egypt, Hungary, India, Israel, Malaysia, Mauritius, Singapore, South Korea, Taiwan, Thailand and Turkey (dotted orange line). For sources and variable definitions see Table C.1. The corresponding figure for real per capita GDP (in levels) is shown in the main paper in Figure 9.

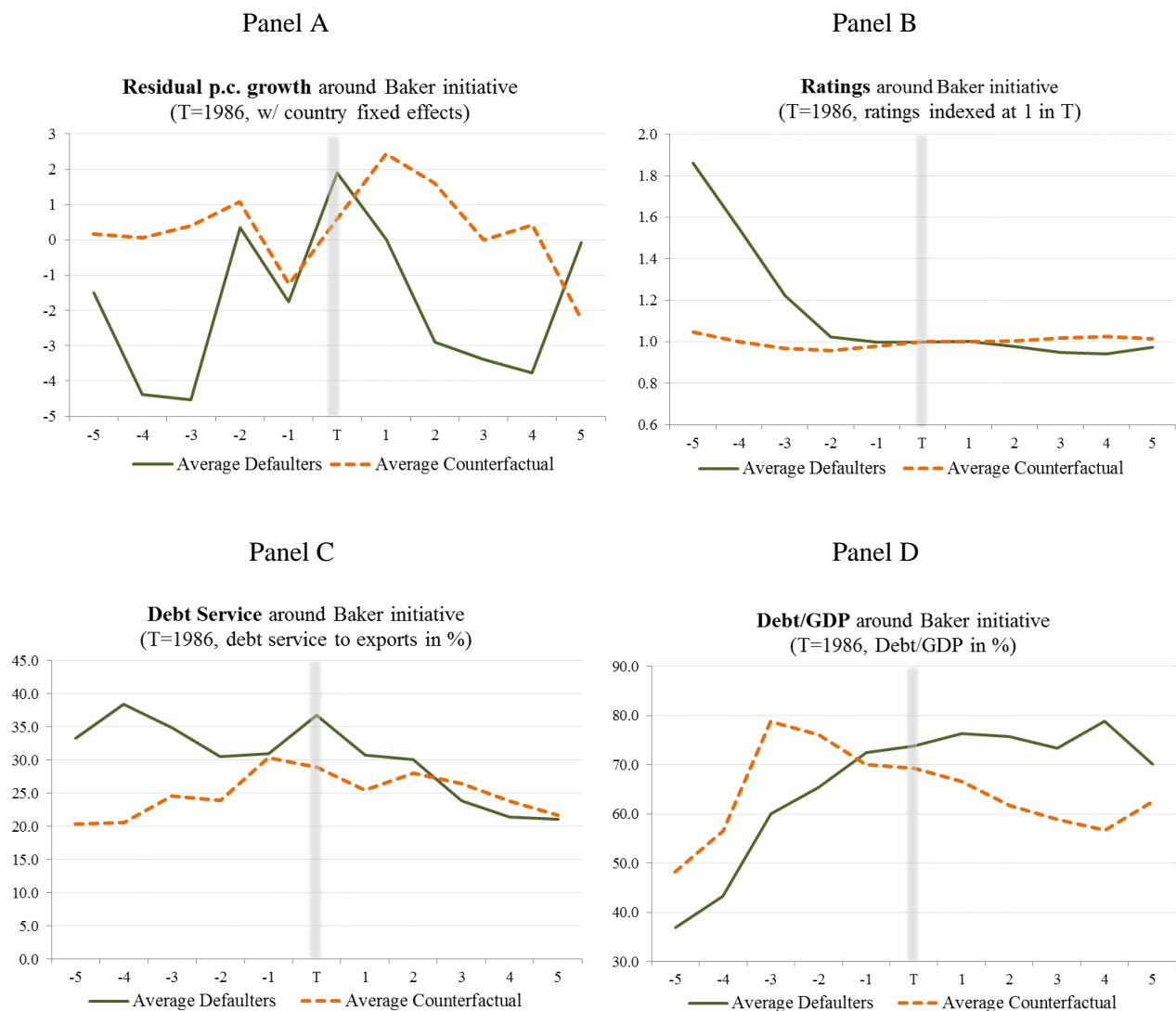


Figure C.8 Brady Plan (1990): Target vs. Counterfactual

This figure compares the evolution of real per capita GDP growth (residuals from a regression of annual real p.c. growth rates on a constant and country-specific dummies), country credit ratings (Institutional Investor Ratings, normalized to 1 in year T), debt service to exports (in %), and the level of public debt to GDP (in %) before and after the start of the Brady initiative (T=1990) for two groups (subject to data availability) for two groups (subject to data availability). The target group (red line) includes the 13 middle-high-income countries that were part of the Brady initiative, namely Argentina, Brazil, Bulgaria, Costa Rica, Dominican Republic, Ecuador, Jordan, Mexico, Panama, Peru, Poland, Uruguay and Venezuela (green line). The counterfactual group are 14 middle-high-income developing countries that did not default nor received debt relief in the late 1980s or 1990s, namely China, Colombia, Czech Republic, Egypt, Hungary, India, Israel, Malaysia, Mauritius, Singapore, South Korea, Taiwan, Thailand and Turkey (dotted orange line). For sources and variable definitions see Table C.1. The corresponding figure for real per capita GDP (in levels) is shown in the main paper in Figure 9.

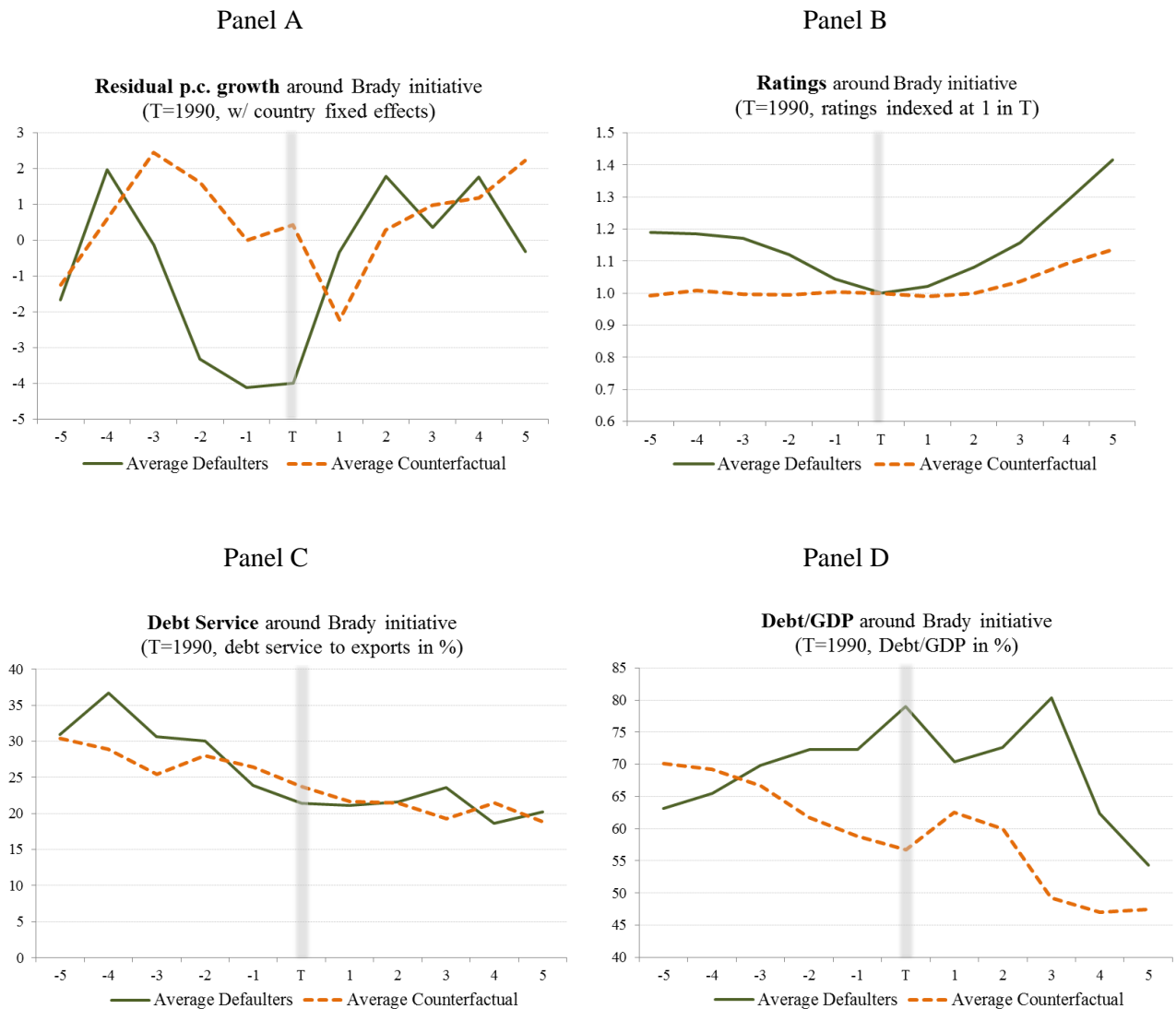
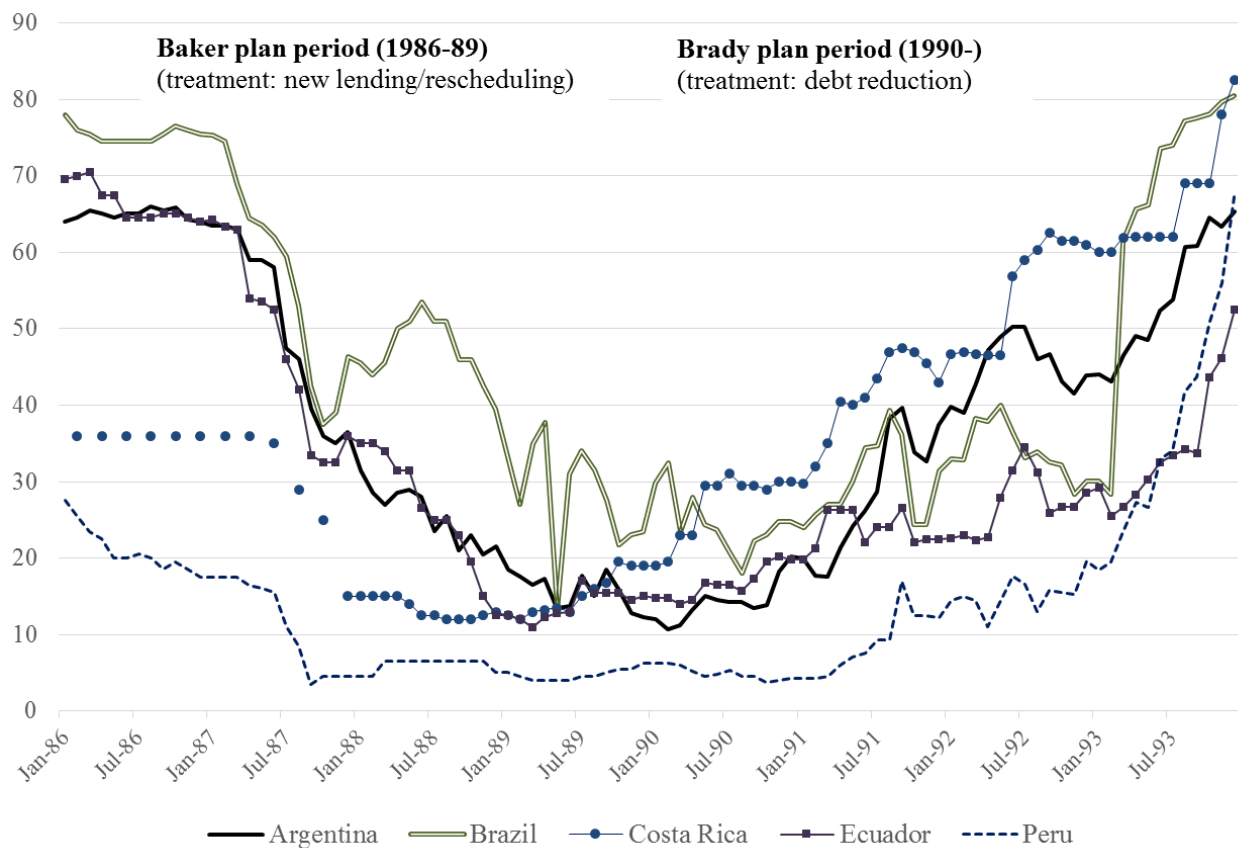


Figure C.9 Secondary Market Prices of Sovereign Debt (1986-1993)

This figures show monthly data of secondary market prices (as a percentage of par value) of developing country loans from January 1986 to December 1993 and aggregated on a country basis. The data is from Sawada (2001) who collected debt prices from the following sources: ANZ McCaughan Merchant Bank (Latin American Markets, various issues), Banco de Santander, Merrill Lynch Capital Markets (Latin American Markets, various issues), Nederlandsche Middenstendsbank N.V. (Euromoney, various issues), Shearson Lehman Hutton (Lehman Brothers), and Salomon Brothers.



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