

The Liquidation of Government Debt

Carmen M. Reinhart

*Peterson Institute for International Economics,
NBER and CEPR*

M. Belen Sbrancia

University of Maryland

*Fiscal Policy and Its Implications for Monetary
and Financial Stability*

June 23-24, 2011, Bank for International Settlements

Throughout history, debt/GDP ratios have been reduced by:

- (i) economic growth;**
- (ii) fiscal adjustment/austerity;**
- (iii) explicit default or restructuring;**
- (iv) a sudden surprise burst in inflation; and**
- (v) a steady dosage of financial repression that is accompanied by an equally steady dosage of inflation.**

(Options (iv) and (v) are only viable for domestic-currency debts).

Financial repression

... includes directed lending to government by captive domestic audiences (such as pension funds), explicit or implicit caps on interest rates, regulation of cross-border capital movements, and (generally) a tighter connection between government and banks.

It is a subtle type of debt restructuring...

This paper is an empirical investigation of (iv) and (v) in that list.

Main results:

In the heavily regulated financial markets of the Bretton Woods, restrictions facilitated a sharp and rapid reduction in public debt/GDP ratios from the late 1940s to the 1970s.

Low nominal interest rates reduced debt servicing costs while a high incidence of negative real interest rates liquidated the real value of government debt.

Main results:

- **For the advanced economies in our sample, real interest rates were negative roughly $\frac{1}{2}$ of the time during 1945-1980.**
- **For the US and the UK our estimates of the annual liquidation of debt via negative real interest rates amounted on average from 3 to 4 percent of GDP a year. For Australia and Italy, which recorded higher inflation rates, the liquidation effect was larger (around 5 percent per annum).**

Main results:

- **“Financial repression” was most successful in liquidating debts when accompanied by a steady dose of inflation.**
- **Inflation need not take market participants entirely by surprise and, in effect, it need not be very high (by historic standards). Indeed, there is little overlap between our dating of inflation surprises and debt reduction in our sample.**

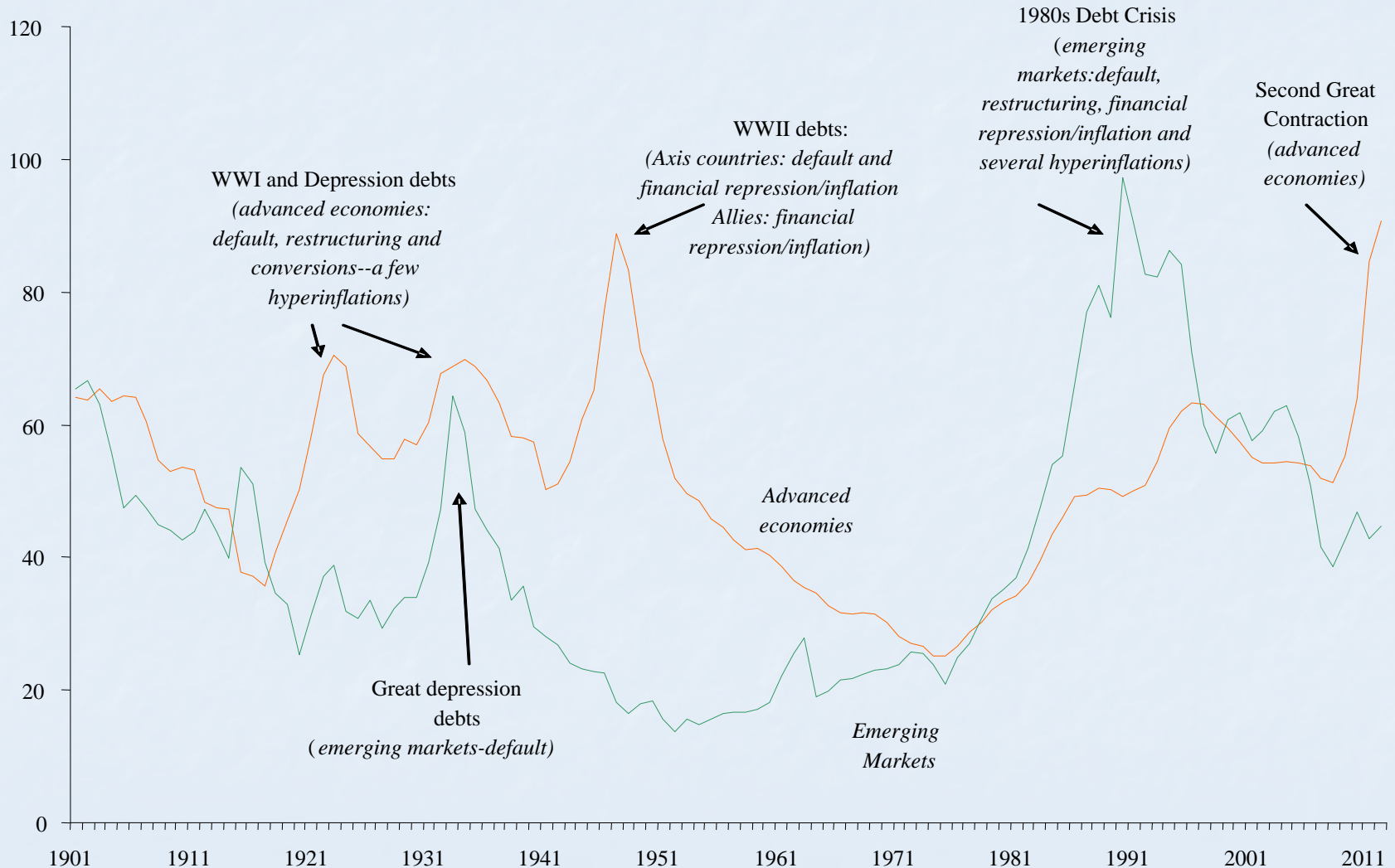
“Some people will think the 2 ¾ nonmarketable bond is a trick issue. We want to meet that head on. It is. It is an attempt to lock up as much as possible of these longer-term issues.”

Assistant Secretary of the Treasury William McChesney Martin Jr.

FOMC minutes, March 1-2, 1951

Remarks on the 1951 conversion of short-term marketable US Treasury debts for 29-year non-marketable bonds. Mr. Martin was subsequently Chairman of the Board of Governors, 1951-1970.

Surges in Central Government Public Debts and their Resolution: Advanced Economies and Emerging Markets, 1900-2011



**Domestic Debt
Conversions, Default or
Restructuring,
1920s–1930s**

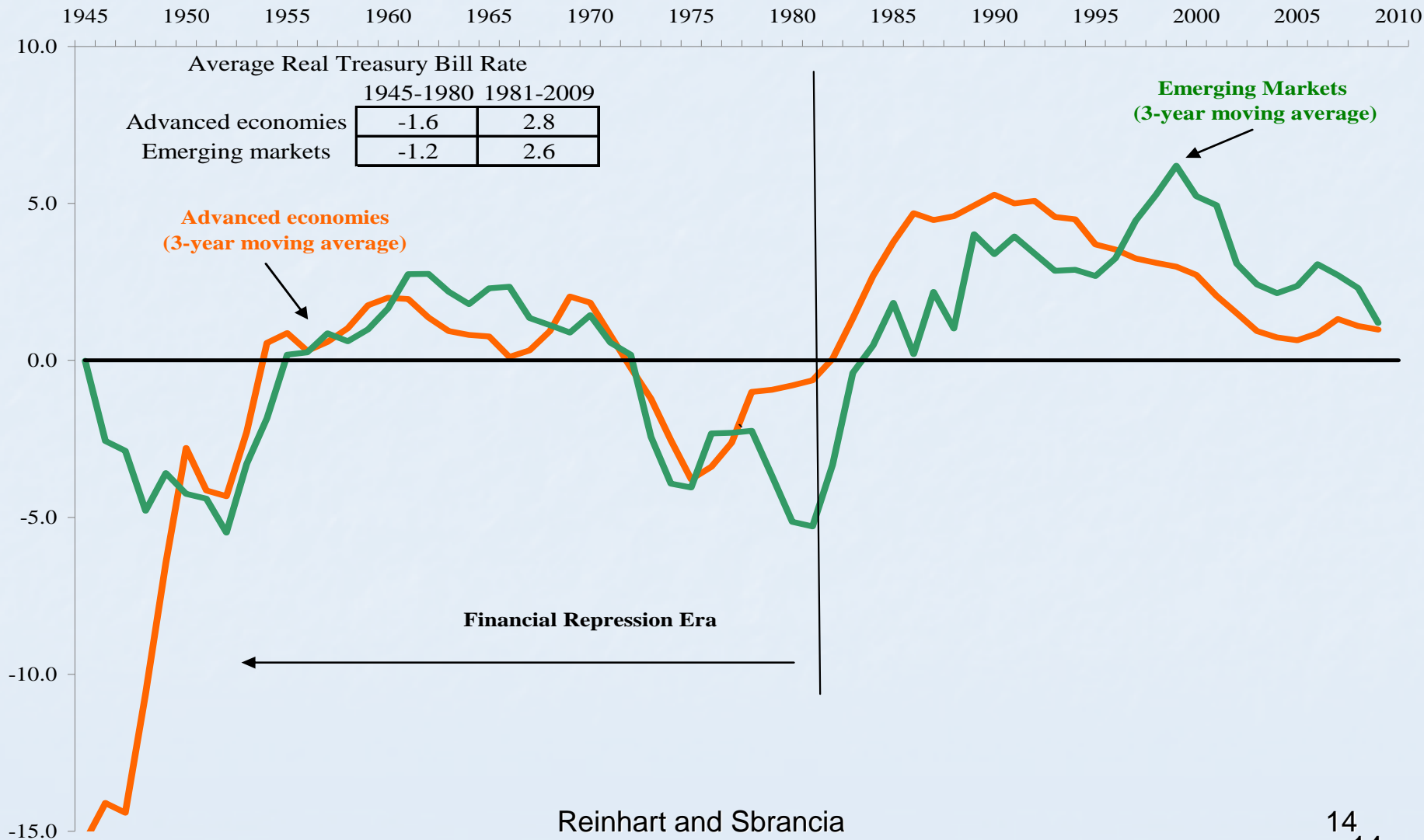
Country	Dates	Commentary
Australia	1931/1932	The Debt Conversion Agreement Act in 1931/32 which appears to have done something similar to the later NZ induced conversion. See New Zealand Arrears of interest lasted until at least 1940.
Bolivia	1927	First of several “consolidations”, monthly cost of domestic service was cut in half. Interest rates were reduced to 6 percent (from over 9 percent) amortization periods were about doubled in length.
China	1932	Various redeemable bonds with coupons between 5 and 7 percent, converted into a 4.5 percent bond with maturity in 75 years.
France	1932	Interest on domestic debt was reduced by 75 percent since 1932.
Greece	1932	Issuance of Littorio. There were 20.4 billion lire subject to conversion. 5 % Littorio converted into 3.5 % Redimibile.
Italy	1926 and 1934	Service on external debt was suspended in 1928. During the 1930s, interest payments included “arrears of expenditure and civil and military pensions.”
Mexico	1930s	In March 1933 the New Zealand Debt Conversion Act was passed providing for voluntary conversion of internal debt amounting to 113 million pounds to a basis of 4 per cent for ordinary debt and 3 per cent for tax-free debt. Holders had the option of dissenting but interest in the dissented portion was made subject to an interest tax of 33.3 per cent.
New Zealand	1933	After suspending service on external debt on May 29, Peru made “partial interest payments” on domestic debt.
Peru	1931	Redemption of domestic and foreign debt is suspended (except for three loans).
Romania	February 1933	Abrogation of the gold clause. In effect, the U.S. refused to pay Panama the annuity in gold due to Panama according to a 1903 treaty. The dispute was settled in 1936 when the US paid the agreed amount in gold <i>balboas</i> .
United States	1933	Most of the outstanding WWI debt was consolidated into a 3.5 percent perpetual annuity. This domestic debt conversion was apparently voluntary. However, some of the WWI debts to the United States were issued under domestic (UK) law (and therefore classified as domestic debt) and these were defaulted on following the end of the Hoover 1931 moratorium.
United Kingdom	1932	After suspending redemption of external debt on January 20, redemptions on domestic debt were equally suspended.
Uruguay	November 1, 1932 – February, 1937	

Selected Measures Associated with Financial Repression

Country	Domestic Financial Regulation Liberalization years (s) in <i>italics</i> with emphasis on deregulation of interest rates.	Capital Account-Exchange Restrictions Liberalization years (s) in <i>italics</i>
Turkey	<p><i>1980-82 and 1987 onwards.</i> Liberalization initiated in 1980 but reversed by 1982. Interest rates partially deregulated again in 1987, when banks were allowed to fix rates subject to ceilings determined by the Central Bank. Ceilings were later removed and deposit rates effectively deregulated. Gold market liberalized in 1993.</p>	<p><i>1989.</i> Partial external liberalization in the early 80's, when restrictions on inflows and outflows are maintained except for a limited set of agents whose transactions are still subject to controls. Restrictions on capital movements finally lifted after August 1989.</p>
United Kingdom	<p><i>1981.</i> The gold market, closed in early World War II, reopened only in 1954. The Bank of England stopped publishing the Minimum Lending Rate in 1981. In 1986, the government withdrew its guidance on mortgage lending.</p>	<p><i>1979.</i> July 79: all restrictions on outward FDI abolished, and outward portfolio investment liberalized. Oct 1979: Exchange Control Act of 1947 suspended, and all remaining barriers to inward and outward flows of capital removed.</p>
United States	<p><i>1982.</i> 1951-Treasury accord/debt conversion swapped marketable short term debt for nonmarketable 29-year bond. Regulation Q suspended and S&Ls deregulated in 1982.</p> <p>In 1933, President Franklin D. Roosevelt prohibits private holdings of all gold coins, bullion, and certificates. On December 31, 1974, Americans are permitted to own gold, other than just jewelry.</p>	<p><i>1974.</i> In 1961 Americans are forbidden to own gold abroad as well as at home. A broad array of controls were abolished in 1974.</p>

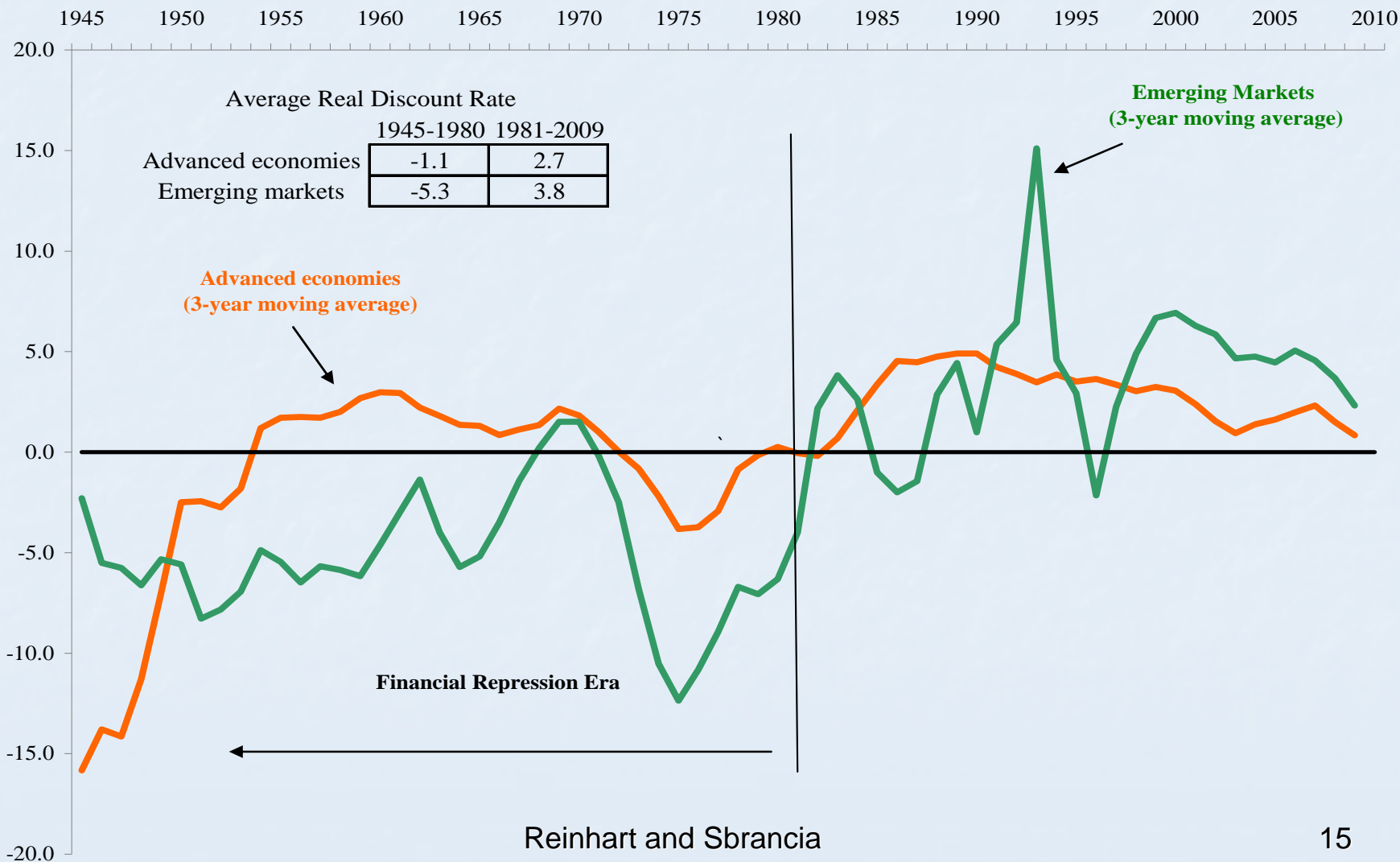
Real Interest Rates

Average Ex-post Real Rate on Treasury Bills: Advanced Economies and Emerging Markets, 1945-2009 (3-year moving averages, in percent)

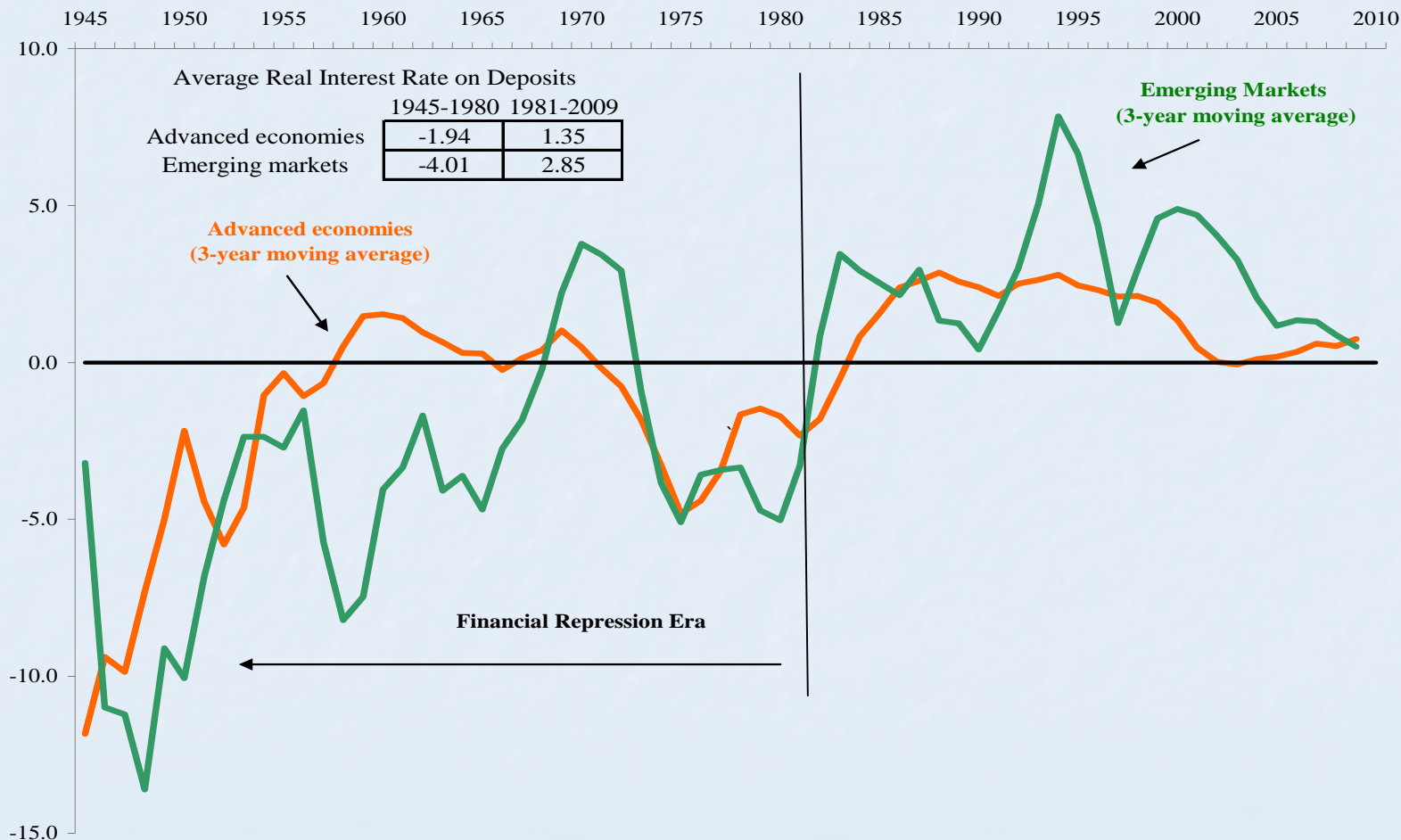


Average Ex-post Real Discount Rate: Advanced Economies and Emerging Markets, 1945-2009

(3-year moving averages, in percent)

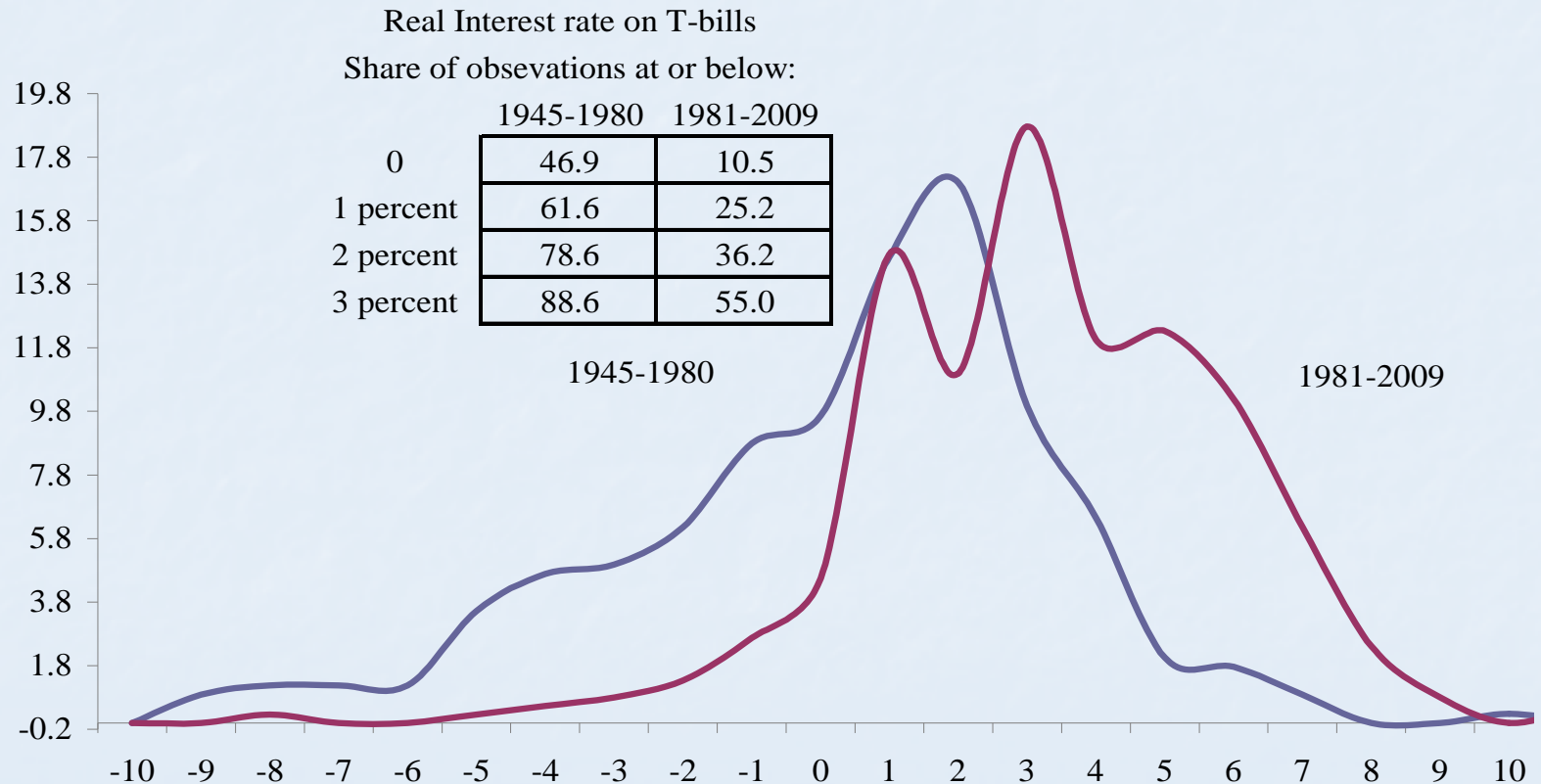


Average Ex-post Real Interest Rates on Deposits: Advanced Economies and Emerging Markets, 1945-2009 (3-year moving averages, in percent)



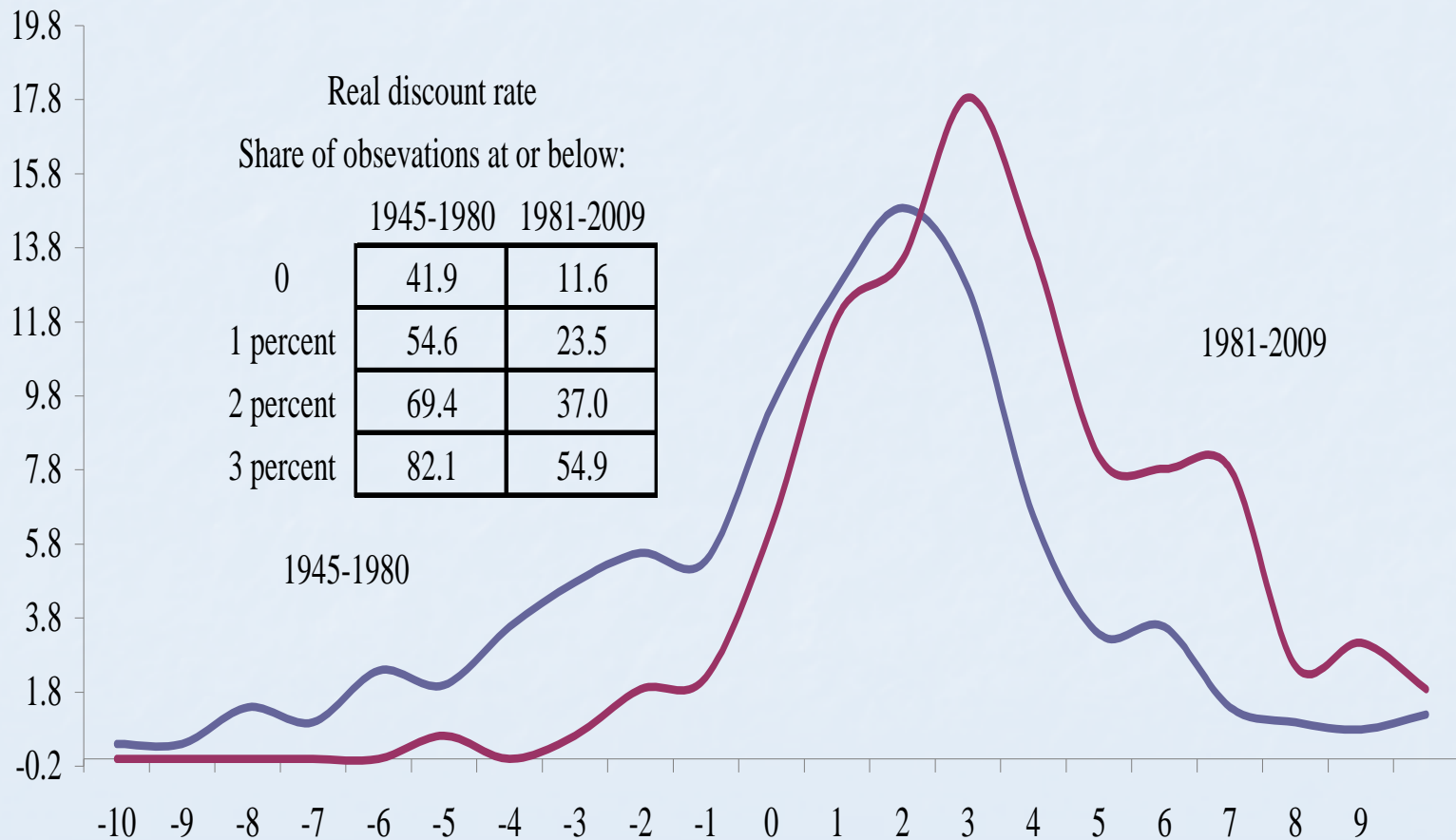
Real Interest Rates Frequency Distributions: Advanced Economies, 1945-2009

Treasury bill rate



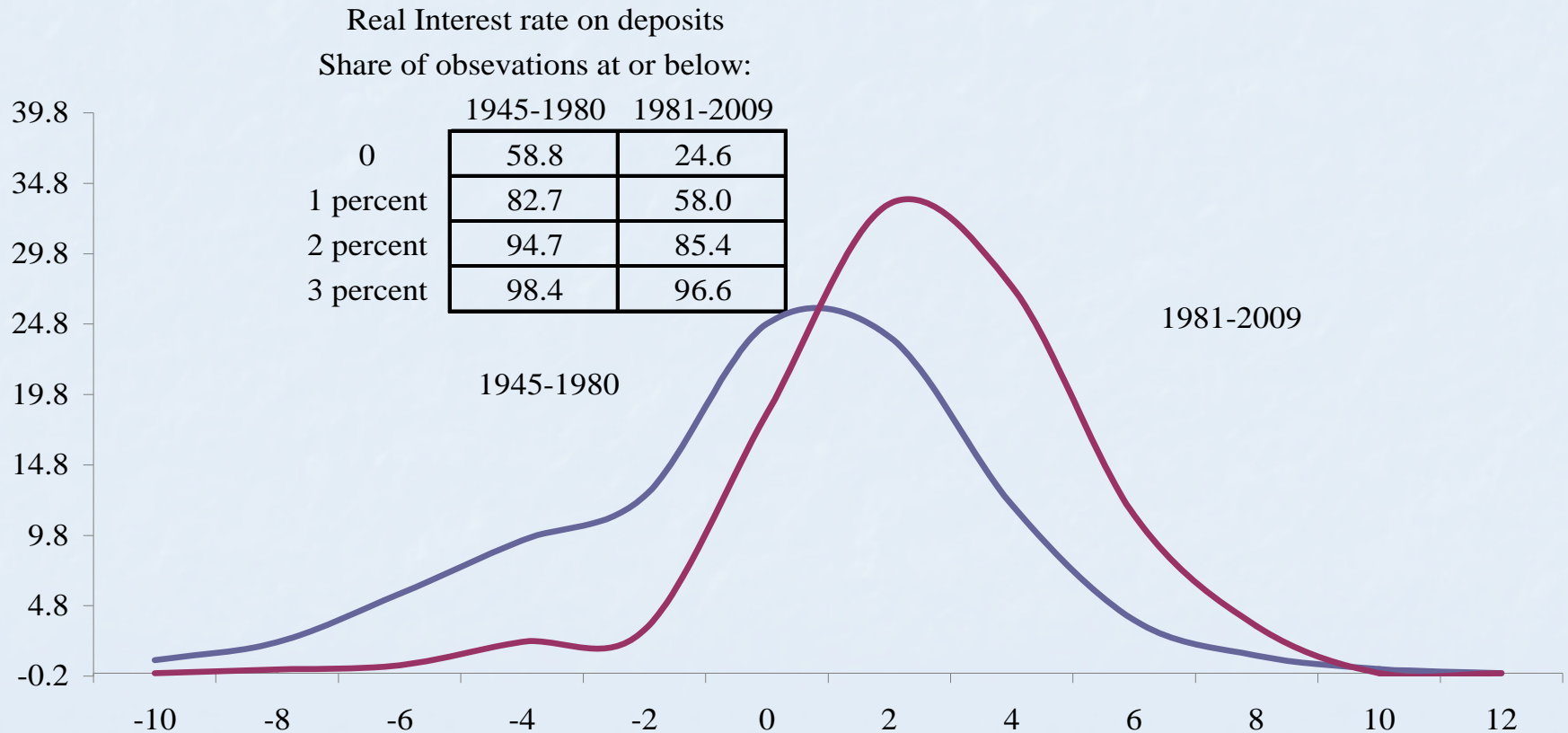
Real Interest Rates Frequency Distributions: Advanced Economies, 1945-2009

Discount rate

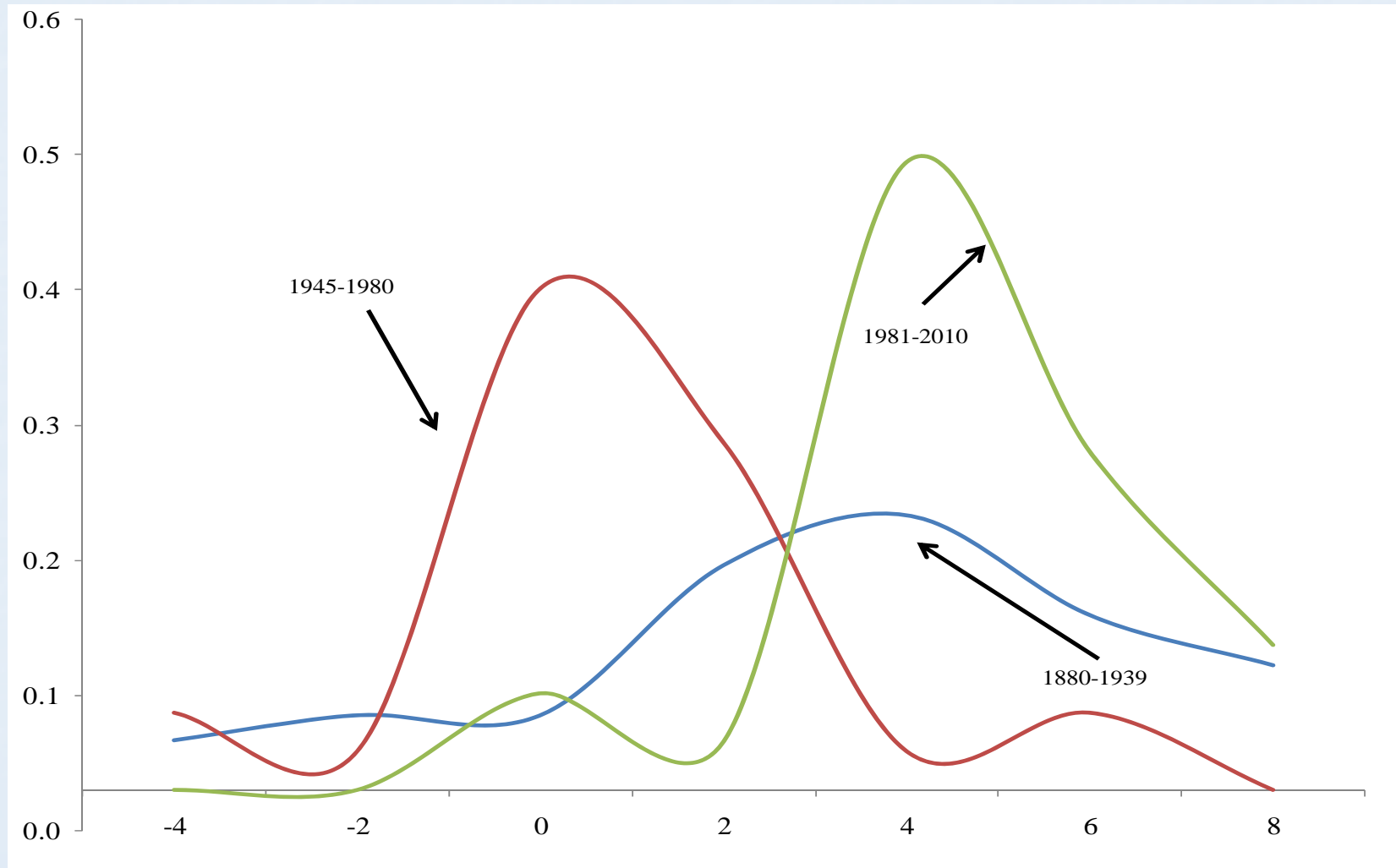


Real Interest Rates Frequency Distributions: Advanced Economies, 1945-2009

Deposit rate



Real Deposit Rates Frequency Distributions: United Kingdom, 1880-2010



**Measuring “Taxes” from
Financial Repression:
*Selected papers***

Study	Measure(s) of financial repression	Sample and coverage	Highlight of findings
Agenor and Montiel (2008)	End-of-year effective reserve requirements ratios are calculated (see entry under Brock). The authors calculate how important a share of seignorage is accounted for by the reserve requirement tax.	32 advanced and emerging market economies 1980 -1991.	Reserve ratios are higher for emerging markets. Among the advanced economies the highest share of seignorage accounted for by reserve ratios is Italy over this period. For the emerging markets, Chile and Peru have the highest readings.
Beim and Calomiris (2001)	Six measures (real interest rates, reserve ratio, liquidity, private borrowing, bank lending, and stock market capitalization) of financial repression are used to construct an aggregate index. Their aim is to provide a broad-brush cross-country comparison at a particular point in time—not a “tax equivalent” to the government.	All countries, advanced and emerging -data permitting. The most comprehensive coverage is for 1997. The annual indices are reported for 1970 and for 1990 for a subset of countries. The period of heaviest repression 1945 -early 1970s is not part of the analysis.	Based on the cross-sectional evidence, the authors conclude that financial development (the opposite of repression) contributes importantly to economic development and growth.
Brock (1989)	End-of-year effective reserve requirements ratios are calculated as base money less currency in circulation (central bank reserves) divided broad money (or money plus quasi-money). Looks at the correlation between inflation rates and the reserve ratio.	41 advanced and emerging market economies 1960 -1984.	Reserve ratios are higher for emerging markets. Among the advanced economies these are highest for Australia and Italy over this period. A positive relationship between inflation and reserve requirements is mostly present in the chronic high inflation countries of Africa and Latin America.

Study	Measure(s) of financial repression	Sample and coverage	Highlight of findings
Easterly (1989)	Net domestic transfers from the financial system and tax on financial intermediation. Uses inflation-adjusted flow of funds analysis to calculate the size of the transfers from reserve requirements, inflation tax, etc,	A dozen relatively large emerging markets. Flow-of-funds balance sheet from 1971 to 1986.	Estimates are highest for Mexico and Yugoslavia among the 12 countries, reaching 12-16 percent of GDP in some years.
Easterly and Schmitt-Hebbel (1994)	Focus on real interest rates on deposits and calculate the repression tax revenue (from that source) as the difference between domestic rates and comparable rates in OECD countries multiplied by the end-of-period stock of deposits (the tax base).	Nine emerging markets, 1970-1988 (the revenue calculations are for less than half of the countries)	This component of the financial repression tax is in the order of 1-2 percent of GDP.
Giovannini and de Melo (1993)	The effective interest rate on external (domestic) debt are calculated as the ratio of external (domestic) interest payments to the stock of external (domestic) debt. The government revenue from financial repression is calculated by computing the differential between the foreign borrowing cost and the domestic borrowing cost, times the average annual stock of domestic debt.	Roughly 1974-1987 (usually shorter period), depending on the country. The 24-developing-country sample does include Greece and Portugal as emerging markets.	Annual estimates of the “revenue from financial repression” are estimated from a low of 0.5 percent of GDP for Zaire (with its small domestic debt market to a high of about 6 percent for Mexico. Estimates for Greece and Portugal are 2-2.5 percent of GDP.

The Liquidation of government debt: *Conceptual issues*

Data requirements

Differences in coupon rates, maturity and the distribution of marketable and nonmarketable debt, securitized debt versus loans from financial institutions, shape the cost of debt financing for the government. There is no “single” government interest rate that is appropriate to apply to a hybrid debt stock. A reconstruction of the government’s debt profile over time is required.

The core sample

Government's debt profiles for 10 countries: *Argentina, Australia, Belgium, India, Ireland, Italy, South Africa, Sweden, the United Kingdom, and the United States.* These were constructed from primary sources over the period 1945-1990 where possible or over shorter intervals (determined by data availability).

Two Examples of Government Debt Profiles. India and the United States

India: Composition of Domestic Debt for Selected Years, 1950-1970

(as percentage of total domestic debt)

	1950	1960	1970
Marketable Rupee Loans	59	48	39
Treasury Bills	15	25	21
Small Savings	17	17	19
Other Obligations	9	10	21

United States: Composition of Domestic Debt for Selected Years, 1946-1976

(as percentage of total domestic debt)

	1946	1956	1966	1976
Interest bearing obligations				
Marketable obligations	67.3	58.0	65.8	64.5
Treasury Bills	6.5	9.1	20.3	25.1
Certificates of Indebtedness	11.4	6.9		
Treasury Notes	3.8	12.8	17.8	33.2
Treasury Bonds	45.5	29.2	27.7	6.2
Other Bonds	0.1	0.0	0.0	0.
Non-marketable obligations	22.7	24.7	16.7	35.4
Special Issues	9.4	16.5	16.6	n.a.
Matured debt on which interest has ceased	0.2	0.3	0.1	0.1
Debt bearing no interest	0.4	0.6	0.8	0.1

Benchmark estimates of the “liquidation effect”

- We construct a “synthetic debt portfolio” for the government’s total debt stock at the beginning of the year.
- The “aggregate” nominal interest rate for a particular year is the coupon rate on a particular type of debt instrument weighted by that instrument’s share in the total stock of debt. We then aggregate across all debt instruments.

Benchmark estimates of the “liquidation effect”

- **The real rate of interest,**

$$r_t = \frac{i_{t-1} - \pi_t}{1 + \pi_t}$$

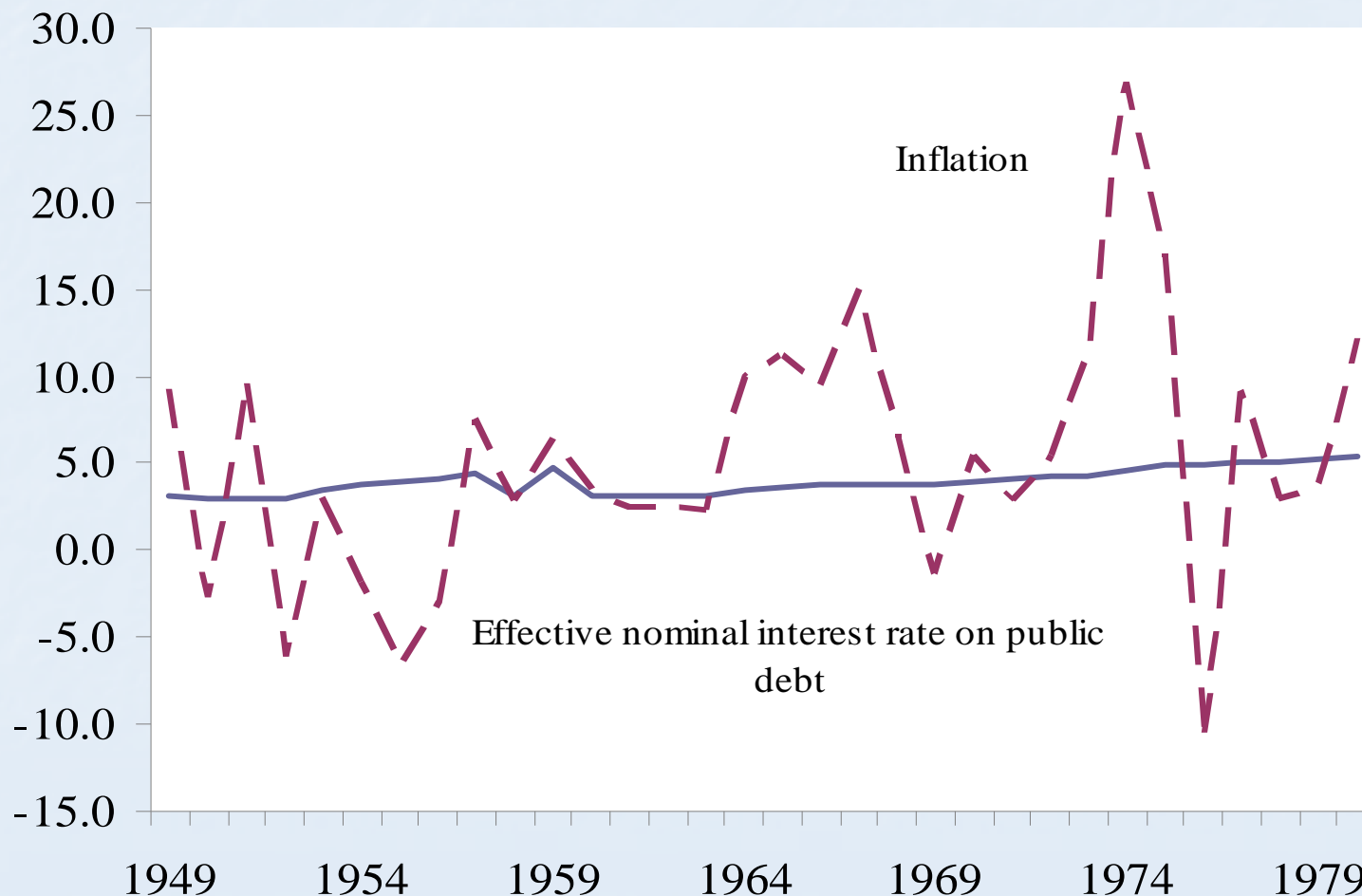
- **Our benchmark calculations define a liquidation year, as one in which the real rate of interest (as defined above) is negative (below zero).**

Benchmark estimates of the “liquidation effect”

- The saving (or “revenue”) to the government or the “*liquidation effect*” or the “*financial repression tax*” is the real (negative) interest rate times the “tax base,” which is the stock of domestic government debt outstanding.

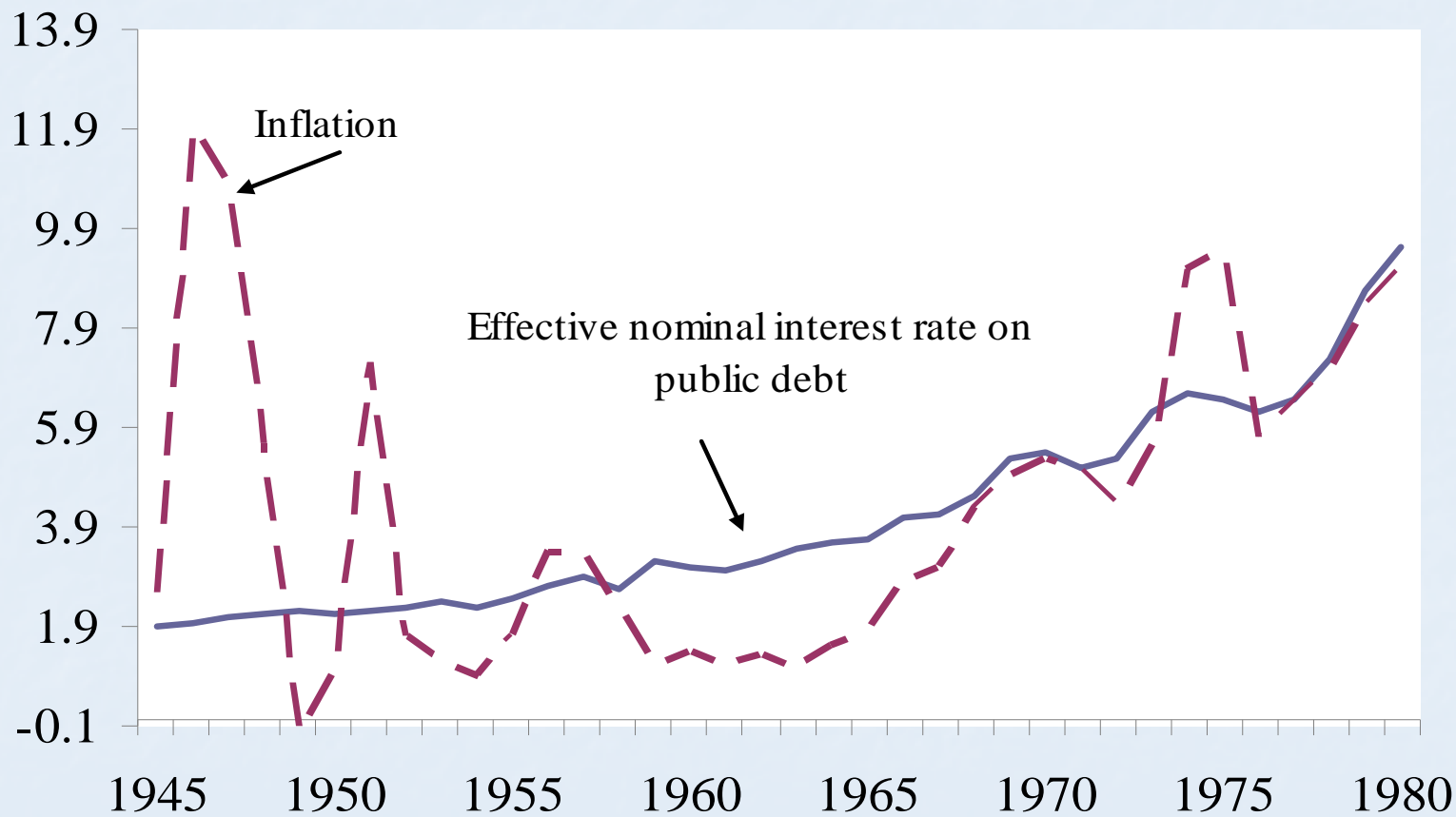
Two Examples of Effective Nominal Interest Rates on Public Debt: India and the United States

India, 1949-1980



Two Examples of Effective Nominal Interest Rates on Public Debt: India and the United States

United States, 1945-1980



The Liquidation of government debt: *Empirical estimates*

Incidence of Liquidation Years for Different Real Interest Rate Thresholds: Selected Countries, 1945-1980

Country (1)	Period (2)	Share of Years with Real Interest Rate below:			
		0 percent(3)	1 percent(4)	2 percent (5)	3 percent (6)
Argentina	1944-1974	97.0	97.0	97.0	97.0
Australia	1945-1968, 1971,1976	48.0	65.4	80.8	92.3
Belgium ¹	1945-1974	48.0	65.4	72.0	80.0
India	1949-1980	53.0	62.5	71.9	78.1
Ireland	1965-1990	62.0	65.4	73.1	76.9
Italy ²	1945-1970	41.0	50.0	53.8	76.9
South Africa	1945-1974	43.0	53.3	66.7	80.0
Sweden	1945-1965, 1984-1990	35.7	39.3	60.7	75.0
United Kingdom	1945-1980	47.8	72.2	86.1	97.2
United States	1945-1980	25.0	63.9	88.9	100.0

Government Revenues from the “*Liquidation Effect:*” per year

Country	Period	Benchmark Measure “Liquidation effect revenues”		Alternative Measure of “Liquidation effect revenues”	
		% GDP	% Tax Revenues	% GDP	% Tax Revenues
Argentina	1944-1974	3.2	19.5	3.0	16.6
Australia	1945-1968, 1971,1978	5.1	20.3	n.a.	n.a.
Belgium	1945-1974	2.5	18.6	3.5	23.9
India	1949-1980	1.5	27.2	1.5	27.2
Ireland	1965-1990	2.0	10.3	n.a.	n.a.
Italy	1945-1970	5.3	127.5	5.9	143.5
South Africa	1945-1974	1.2	8.9	n.a.	n.a.
Sweden	1945-1965, 1984-1990	0.9	6.5	1.6	10.9
United Kingdom ¹	1945-1980	3.6	26.0	2.4	17.3
United States	1945-1980	3.2	18.9	2.5	14.8

Liquidation through Financial Repression: Selected Countries, 1945-1955

Country	Public debt/GDP		1955 without repression savings (est.) ⁴	Annual average: 1946-1955	
	1945	1955 (actual)		“financial repression revenue”/GDP	inflation
Australia	143.8	66.3	199.8	6.2	3.8
Belgium ¹	112.6	63.3	132.2	4.6	8.7
Italy ²	66.9	38.1	81.9	3.7	10.8
Sweden	52.0	29.6	59.1	1.8	5.0
United Kingdom ³	215.6	138.2	246.9	4.5	5.9
United States	116.0	66.2	141.4	6.3	4.2

Inflation surprises and its broader role in debt reduction

Because we do not have a direct measure of inflation expectations for much of the sample, we define inflation bursts or “surprises” in a more mechanical, ex-post manner.

Specifically, we calculate a ten-year moving average for inflation and classify those years in which inflation was more than two-standard deviations above the 10-year average as an “inflation burst/surprise year”.

As the 10-year window may be arbitrarily too backward looking, we also perform the comparable exercise using a five-year moving average.

Do Inflation Surprises Coincide with Debt Liquidation? 10 countries, 1945-1980

Country	Share of “inflation surprise” years	Share of liquidation years which are also “inflation surprise” years	Inflation surprise years*
Argentina	26.7	27.6	1945,1946,1949-1951,1959,1972,1973
Australia	7.7	16.7	1951,1966
Belgium	12.0	25.0	1972-1974
India	6.3	10.5	1973,1974
Ireland	11.5	20.0	1970,1972,1973
Italy	7.7	18.2	1962,1963
South Africa	13.9	0.0	1964,1971-1974
Sweden	3.6	11.1	1951
United Kingdom	13.9	23.5	1970,1971,1973-1975
United States	25.0	22.2	1946,1966,1968,1969,1970,1973,1974,1979,1980

**Inflation Performance during
Major Domestic Public Debt
Reduction Episodes: 28
Countries, 1790-2009**

Extended Sample for Inflation and Domestic Debt Reduction Analysis: 28 Countries, 1790-2009

Country	Sample Period	Country	Sample Period
Argentina	1884-2009	Italy	1914-2009
Australia	1914-2009	Japan	1885-1940, 1952-2009
Belgium	1920-1939,1946-2009	Korea	1976-2005
Brazil	1900-2009	Malaysia	1955-1957, 1976-2009
Canada	1925-2007	Mexico	1918-1967, 1976-2009
Chile	1927-1930,1937- 1953,1978-2009	New Zealand	1932-2008
Colombia	1923-2009	Philippines	1948-2009
Egypt	1993-2009	South Africa	1911-2009
Finland	1915-2009	Sweden	1880-2009
France	1920-1938, 1949- 2009	Thailand	1950-2009
Germany	1920-1938, 1950- 2009	Turkey	1933-1972, 1976-2009
Greece	1920-1939, 1950- 1965, 1978-1981, 1993-2009	United Kingdom	1830-2009
India	1950-2009	United States	1790-2009
Ireland	1948-2008	Venezuela	1921-2009

Major Debt Reduction Episodes*			Full Sample		
Dates	Inflation		Inflation		
	Average	Median	Average	Median	
Argentina	1900-1902, 1990, 2006-2007	479.8	8.2	82.5	8.6
Australia	1948, 1949-1953	10.3	9.3	3.0	2.5
Belgium	1925-28, 1949	10.7	12.8	2.0	1.9
France	1924, 1926-1927, 1938	11.1	12.6	6.4	2.7
Greece	1925-1927	23.7	12.8	8.0	5.1
India	1958, 1996, 2006	7.1	6.2	6.6	6.2
Italy	1945, 1946-1948	106.7	44.3	10.6	2.6
Japan	1898, 1912-1913	7.6	6.7	3.6	2.6
Malaysia	1995	8.4	8.8	6.9	5.4
Mexico	1991, 1992, 1993	18.9	20.0	13.3	5.6
New Zealand	1935-1937, 1950-1952	4.9	5.3	4.2	2.8
South Africa	1935, 1952, 1981, 2001-2002	7.0	6.6	5.8	4.9
Sweden	1948, 1952, 1989, 2001-2003, 2009	4.7	3.2	4.4	3.2
Turkey	1943, 2006-2008	23.2	9.2	25.3	9.7
UK	1836, 1846, 1854, 1936, 1940, 1948-1950, 1951-1954	4.7	3.7	2.7	1.8
US	1794-1796, 1881-1882, 1948-1952, 1953, 1957, 1966	4.0	2.6	1.6	1.7

The return of financial repression?

The collective buildup of public debts in the advanced economies during WWI was largely unwound through default in the 1930s

The even larger buildup in public debts of WWII was unwound partially through steady growth-but, more importantly, through “financial repression”

The return of financial repression?

To deal with the current debt overhang, similar policies to those documented here may re-emerge in the guise of prudential regulation rather than under the politically incorrect label of financial repression.

Moreover, the process where debts are being “placed” at below market interest rates in pension funds and other more captive domestic financial institutions is already under way in several countries in Europe.