A Decade of Debt

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September 27, 2011, Peterson Institute for International Economics, Washington DC
Challenges in the aftermath of the crisis

- **The advanced economies:** Public and private debt overhang, deleveraging, lower growth and high unemployment

- **The emerging markets:** Sustained large capital inflows, inflationary pressures, overheating/bubble risks
The sequencing of crises: the big picture

Reinhart-Rogoff, 2008c
no clear sequence of
domestic versus
external default

Diaz-Alejandro's "goodby financial repression, hello financial crash"
stock and real
estate market
crashes--economic slowdown begins

Financial Liberalization → Beginning of banking crisis → Currency crash → Inflation picks up → Peak of banking crisis (if no default) → Default on external and/or domestic debt → Inflation crisis worsens

Kaminsky-Reinhart "twin crises"

Capital controls introduced or increased around this time
Private debts on the eve of financial crises
Prior to the subprime crisis that began in 2007, private debts—domestic and external—surged in many advanced economies, most notably in Europe.
Gross External Debt as a Percent of GDP: Averages for Selected 59 Countries, 2003-2010 (in percent)
United States: Total Public and Private Debt/GDP, 1916-2010

1933, suspension of the Gold Clause default (shaded)

First year of banking crises (black lines)
The legacy of financial crises
In 2008, we suggested that

- Financial crises were protracted affairs.
- Deep financial crises had major adverse consequences for government finances.
- The impacts in the aftermath went beyond bailout costs and stimulus packages—revenues implode.

Cumulative Increase in Public debt in the Three Years Following Systemic Banking Crisis: Selected Post-World War II Episodes

Index=100 in year of crisis

Malaysia, 1997
Mexico, 1994
Japan, 1992
Norway, 1987
Philippines, 1977
Korea, 1997
Sweden, 1991
Thailand, 1997
Historical
Spain, 1977
Indonesia, 1997
Chile, 1980
Finland, 1991
Colombia, 1998

186.3 (an 86 percent increase)
Since the crisis, public debts in the advanced economies have surged in recent years to levels not recorded since the end of World War II, surpassing previous peaks reached during the First World War and the Great Depression.
Gross Central Government Debt as a Percent of GDP: Advanced and Emerging Market Economies, 1860-2010

- World War I
- World War II
- Depression
- Emerging Markets
- Advanced Economies

Reinhart and Sbrancia

WWI and Depression debts
(advanced economies: default, restructuring and conversions--a few hyperinflations)

Great depression debts
(emerging markets-default)

WWII debts:
(Axis countries: default and financial repression/inflation
Allies: financial repression/inflation)

1980s Debt Crisis
(emerging markets: default, restructuring, financial repression/inflation and several hyperinflations)

Second Great Contraction
(advanced economies)

Advanced economies

Emerging Markets
From financial crash to debt crisis
Banking crises most often either precede or coincide with sovereign debt crises.

The reasons for this temporal sequence may be the contingent liability story emphasized by Diaz Alejandro (1985), in which the government takes on massive debts from the private banks, thus undermining its own solvency.
Iceland and Ireland

External (public plus private) Debt, 1970-2010 (debt as a percent of GDP)
### Iceland: Evolution of Credit Ratings: 2002-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Current account/GDP</th>
<th>External debt/GDP</th>
<th>Domestic credit/GDP</th>
<th>Moodys ratings on long-term debt</th>
<th>S and P ratings on long-term debt</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Domestic</td>
<td>Foreign</td>
</tr>
<tr>
<td>2002</td>
<td>1.6</td>
<td>108.8</td>
<td>104.8</td>
<td>Aaa</td>
<td>Aaa</td>
</tr>
<tr>
<td>2006</td>
<td>-25.7</td>
<td>442.7</td>
<td>304.7</td>
<td>Aaa</td>
<td>Aaa</td>
</tr>
<tr>
<td>2008</td>
<td>-28.3</td>
<td>970.7</td>
<td>237.8</td>
<td>Baa1</td>
<td>Baa1</td>
</tr>
<tr>
<td>2010</td>
<td>-8.0</td>
<td>914.8</td>
<td>n.a.</td>
<td>Baa3</td>
<td>Baa3</td>
</tr>
</tbody>
</table>
Iceland and Ireland

General Government (domestic plus external) Debt, 1925-2010 (debt as a percent of GDP)

Iceland
Peak of crisis: 2007

Ireland

Reinhart
This temporal pattern from financial crash to sovereign debt crisis is borne out by formal causality tests for both individual-country panel data as well as the aggregates for advanced and emerging market economies.
Sovereign Default, Total (domestic plus external) Public Debt, and Systemic Banking Crises: Advanced Economies, 1880-2010 (debt as a % of GDP)

Years during which 25% or more of advanced economies entered the first year of a banking crisis (black bars)

- 1893
- 1907
- 1914
- 1931
- 2008

Percent of advanced economies in default or restructuring (shaded, left scale)

Advanced economies Average public debt/GDP (in percent, line, right scale)
### Sovereign Default, Public Debt, and Systemic Banking Crises: Advanced Economies, 1880-2010

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Sample</th>
<th>Independent variables</th>
<th>$OBS$ (robusterrors)</th>
<th>$Logistic$ (robusterrors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Economies:</td>
<td></td>
<td>Public debt/GDP (t-1)</td>
<td>0.209 0.002</td>
<td>0.000 0.002</td>
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<tr>
<td></td>
<td></td>
<td>$p$-value</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Number of observations</td>
<td></td>
<td>130</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td>0.176</td>
<td>0.167</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Sample</th>
<th>Independent variables</th>
<th>$OBS$ (robusterrors)</th>
<th>$Logistic$ (robusterrors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Economies:</td>
<td></td>
<td>Public debt/GDP (t-1)</td>
<td>0.057 0.001</td>
<td>0.002 0.006</td>
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<tr>
<td></td>
<td></td>
<td>$p$-value</td>
<td>0.002</td>
<td>0.006</td>
</tr>
<tr>
<td>Number of observations</td>
<td></td>
<td>130</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td>0.047</td>
<td>0.050</td>
<td></td>
</tr>
</tbody>
</table>
Historically, public debt buildups have often ended in sovereign debt crises.

There is a systematic link between debt/GDP and the incidence of default.
Sovereign Default, Total (domestic plus external) Public Debt, and Inflation Crises: World Aggregates, 1826-2010 (debt % of GDP)

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>World: Share of countries in default or restructuring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>1824–2009</td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
</tr>
<tr>
<td>OLS (robust errors)</td>
<td></td>
</tr>
<tr>
<td>Fractional logit 1 (robust errors)</td>
<td></td>
</tr>
<tr>
<td>World: Public debt/GDP (t–1)</td>
<td>0.346 0.008</td>
</tr>
<tr>
<td></td>
<td>0.000 0.000</td>
</tr>
<tr>
<td>p-value</td>
<td>184 184</td>
</tr>
<tr>
<td>R²</td>
<td>0.224 0.246</td>
</tr>
</tbody>
</table>

Reinhart 24
Greece: Central Government Debt, Default, Hyperinflation, and Banking Crises, 1848-2009 (debt as a percent of GDP)

Banking crisis (black line)
defaults (shaded)

1941-1944 Hyperinflation

Household debt as a % of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>6</td>
</tr>
<tr>
<td>2000</td>
<td>12.9</td>
</tr>
<tr>
<td>2005</td>
<td>35.9</td>
</tr>
<tr>
<td>2008</td>
<td>49.7</td>
</tr>
</tbody>
</table>

2010, Near-default
Debt and growth
Debt concepts and definitions

In this analysis “public debt” refers to gross central government debt. “Domestic public debt” is government debt issued under domestic legal jurisdiction. Public debt does not include debts carrying a government guarantee. Total gross external debt includes the external debts of all branches of government as well as private debt that is issued by domestic private entities under a foreign jurisdiction.
We divided the experience into 4 debt/GDP buckets

- 0 to 30 percent
- 30 to 60 percent
- 60 to 90 percent
- 90 percent and above—this last bucket is relatively rare
The 90 percent debt/GDP threshold: 1946-2009 Advanced economies

**Probability density function**

<table>
<thead>
<tr>
<th>Public debt/GDP</th>
<th>1946-2009, 22 advanced economies</th>
</tr>
</thead>
<tbody>
<tr>
<td>median</td>
<td>36.4</td>
</tr>
<tr>
<td>average</td>
<td>43.5</td>
</tr>
<tr>
<td>min</td>
<td>2.8</td>
</tr>
<tr>
<td>max</td>
<td>237.9</td>
</tr>
<tr>
<td>annual observations</td>
<td>1,326</td>
</tr>
</tbody>
</table>

91.6% of observations below 90%

8.4% of observations above 90%
Our main results are as follows:

First, the empirical relationship between (gross central) government debt and real GDP growth is fairly weak for debt/GDP ratios below 90 percent of GDP. At or above 90 percent, growth deteriorates markedly, with median growth rates falling by 1 percent, and average growth rates falling considerably more.

Surprisingly, we find that the threshold for public debt is similar in both advanced countries and emerging markets.

GDP growth (bars, left axis)

Inflation (line, right axis)

Debt/GDP
- below 30%
- 30 to 60%
- 60 to 90%
- above 90%

Reinhart
Second, emerging markets face a much more binding threshold for total (public and private) gross external debt which is almost exclusively denominated in a foreign currency.

When gross external debt reaches 60 percent of GDP, annual growth declines by about two percent; for levels of external debt in excess of 90 percent of GDP, growth rates are roughly cut in half.

Debt/GDP
- below 30%
- 30 to 60%
- 60 to 90%
- above 90%

GDP growth (bars, left axis)

Inflation (line, right axis)
The return of financial repression?

Based on Reinhart and Sbrancia (2011)
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...
# Selected Measures Associated with Financial Repression

<table>
<thead>
<tr>
<th>Country</th>
<th>Domestic Financial Regulation</th>
<th>Capital Account-Exchange Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>1980-82 and 1987 onwards. 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.</td>
<td>1989. 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.</td>
</tr>
</tbody>
</table>
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”.
Main results of Reinhart and Sbrancia (2011):

- For the advanced economies in our sample, real interest rates were negative roughly ½ 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).
Government Revenues from the “Liquidation Effect:” per year

<table>
<thead>
<tr>
<th>Country</th>
<th>Period</th>
<th>Benchmark Measure “Liquidation effect revenues” % GDP</th>
<th>% Tax Revenues</th>
<th>Alternative Measure of “Liquidation effect revenues” % GDP</th>
<th>% Tax Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1944-1974</td>
<td>3.2</td>
<td>19.5</td>
<td>3.0</td>
<td>16.6</td>
</tr>
<tr>
<td>Belgium</td>
<td>1945-1974</td>
<td>2.5</td>
<td>18.6</td>
<td>3.5</td>
<td>23.9</td>
</tr>
<tr>
<td>India</td>
<td>1949-1980</td>
<td>1.5</td>
<td>27.2</td>
<td>1.5</td>
<td>27.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>1965-1990</td>
<td>2.0</td>
<td>10.3</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Italy</td>
<td>1945-1970</td>
<td>5.3</td>
<td>127.5</td>
<td>5.9</td>
<td>143.5</td>
</tr>
<tr>
<td>South Africa</td>
<td>1945-1974</td>
<td>1.2</td>
<td>8.9</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Sweden</td>
<td>1945-1965, 1984-1990</td>
<td>0.9</td>
<td>6.5</td>
<td>1.6</td>
<td>10.9</td>
</tr>
<tr>
<td>United Kingdom¹</td>
<td>1945-1980</td>
<td>3.6</td>
<td>26.0</td>
<td>2.4</td>
<td>17.3</td>
</tr>
<tr>
<td>United States</td>
<td>1945-1980</td>
<td>3.2</td>
<td>18.9</td>
<td>2.5</td>
<td>14.8</td>
</tr>
</tbody>
</table>
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.
Real Interest Rates Frequency Distributions: Advanced Economies, 1945-2011

Real interest rates
Share of observations at or below

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>46.9</td>
<td>10.5</td>
<td>49.5</td>
</tr>
<tr>
<td>1 percent</td>
<td>61.6</td>
<td>25.2</td>
<td>82.1</td>
</tr>
<tr>
<td>2 percent</td>
<td>78.6</td>
<td>36.2</td>
<td>97.2</td>
</tr>
<tr>
<td>3 percent</td>
<td>88.6</td>
<td>55.0</td>
<td>99.5</td>
</tr>
</tbody>
</table>

Share of "Outside" Treasury Securities

Share of "Outside" Treasury Securities plus GSEs