


Outline of talk

Advanced economies post crisis

(i) Delayed recovery, (ii) deflationary tendencies (iii) Debt overhangs

(ii) Undoing debt overhangs

Menu of options with a focus on:

(i) Debt restructuring, (ii) the role of monetary policy and financial regulation (financial repression).
The 2007-2009 Crisis: Severity measures

- It is still premature to construct a definitive measure of the severity of the recent crises.
- Of the 11 advanced economies experiencing a systemic crisis starting in 2007-2008 (France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Portugal, Spain, UK, and US), only Germany and the US have reached their pre-crisis peak in per capita GDP by 2014 and 2 more (Ireland and UK) by 2015.
### Output, Crises and Recovery
Reinhart and Rogoff (2014) updated with World Economic Outlook, April 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>% change peak to trough</th>
<th>Number of years</th>
<th>Severity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>France</td>
<td>-3.8</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>2008</td>
<td>Germany</td>
<td>-5.3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2008</td>
<td>Greece</td>
<td>-24.9</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>2007</td>
<td>Iceland</td>
<td>-9.7</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>2007</td>
<td>Ireland</td>
<td>-11.0</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>2008</td>
<td>Italy</td>
<td>-10.9</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>2008</td>
<td>Netherlands</td>
<td>-4.4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>2008</td>
<td>Portugal</td>
<td>-7.0</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>2008</td>
<td>Spain</td>
<td>-10.3</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>2007</td>
<td>UK</td>
<td>-5.9</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>2007</td>
<td>US</td>
<td>-4.8</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>Mean</td>
<td><strong>-8.9</strong></td>
<td><strong>4.2</strong></td>
<td><strong>9.6</strong></td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td><strong>-7.0</strong></td>
<td><strong>3.0</strong></td>
<td><strong>9.0</strong></td>
</tr>
</tbody>
</table>

Note: The italics denote any calculation in which IMF estimates for 2014- are used.
The number of years to recover the pre-crisis peak in per capita GDP in 100 of the worst crises since the 1840s is about 8 years (the median is 6 1/2 years).

In the 2007-2008 wave of crises, the average may come in closer to 10 years.
The incidence of deflation and high inflation, 22 advanced economies, 1945-2016

Share of advanced economies (22 countries)

Share with annual inflation above 10%

Share with deflation

Iceland 2008-2009

Japan
What factors have made this crisis so protracted? What is the end-game?

The list includes:

- the synchronous nature of the crisis,
- the absence of greater exchange rate adjustment,
- austerity,
- the dearth of credit—(external or domestic),
- the lack of deleveraging and write-downs (private or public) almost a decade later.

Banking crises in at least three countries (shaded)

Average for India, Indonesia, Korea, Malaysia, Philippines, and Thailand

Undoing debt overhangs

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).

Reinhart
Preamble: Financial repression defined

Financial repression involves a combination of tighter financial regulation and (usually) sustained low or negative real interest rates. It is an opaque tax.

It can include directed lending to the government by: Creating or broadening captive domestic audiences (such as pension funds or domestic banks), explicit or implicit caps on interest rates, regulation of cross-border capital movements, and (generally) a tighter connection between government and banks, either explicitly through public ownership of some of the banks, balance sheet exposure, or heavy “moral suasion”.

Financial repression is also sometimes associated with relatively high reserve requirements (or liquidity requirements), securities transaction taxes, prohibition of gold purchases (as in the US from 1933 to 1974), or the placement of significant amounts of government debt that is nonmarketable.

In the current policy discussion, financial repression issues usually come under the broad umbrella of “macro prudential regulation.”
Public debt as a percent of GDP: Advanced Economies: 1900-2016

WWI and Depression debts
advanced and emerging economies: default, restructuring and

WWII debts:
Axis countries: default and financial repression/inflation
Allies: financial repression/inflation
Public debt reduction has not always been orthodox -- even in advanced economies

Reinhart, Reinhart and Rogoff (2015)

Factors Behind Debt Reversals:
Fiscal Adjustment, Restructuring, Inflation, Growth, and Real Interest Rates

<table>
<thead>
<tr>
<th></th>
<th>Growth &gt; median</th>
<th>Primary balance &gt; median</th>
<th>Real rates &lt; median</th>
<th>Inflation &gt; median</th>
<th>Default or restructure &gt; median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample, 70 episodes</td>
<td>38</td>
<td>41</td>
<td>41</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td>Number of episodes</td>
<td>Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.54</td>
<td>0.61</td>
<td>0.59</td>
<td>0.59</td>
<td>0.23</td>
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<tr>
<td>Post-war cases, 36 episodes</td>
<td>21</td>
<td>16</td>
<td>30</td>
<td>30</td>
<td>9</td>
</tr>
<tr>
<td>Number of episodes</td>
<td>Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.58</td>
<td>0.48</td>
<td>0.86</td>
<td>0.83</td>
<td>0.25</td>
</tr>
<tr>
<td>Peacetime, 34 episodes</td>
<td>17</td>
<td>25</td>
<td>11</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Number of episodes</td>
<td>Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.50</td>
<td>0.74</td>
<td>0.32</td>
<td>0.32</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Memorandum items:
Share of debt reduction episodes associated with deflation

Total 0.07
War 0.11
Peace 0.03
Official debt is the Greek story
(but is also substantive for Ireland and Portugal)
Arslanalp and Tsuda, (2014)
Greece
Stylized crisis timeline of the 1920s/1930s and 1980s/1990s—it took a decade or more to arrive at conclusive restructuring Reinhart and Trebesch (2016)

1920s/1930s
- First defaults early-1920s
- Debt Reschedulings of the mid-1920s
  → cash flow relief
- 1931 Hoover Moratorium
  → cash flow relief
- 1934 Default and Write Off
  → debt stock reduction

1980s/1990s
- Defaults, Rollovers and Reschedulings after 1982
  → cash flow relief
- Baker Plan (1986)
  → cash flow relief
- Brady Plan (1990)
  → debt stock reduction

Reinhart
Real Per Capita GDP Around Debt Relief Events (Exit from Default) in Middle-High Income Emerging Markets (1978-2010) and Advanced Economies (1934)

10-year window around debt relief event, level of real per capita GDP at $T=1$

Index $T=1$

GDP for 15 advanced economy interwar episodes ($T=1934$)

GDP for 30 middle-to-high income emerging market episodes, 1978-2010
(T=year of final restructuring)
Real interest rates, financial regulation, and the post crisis re-emergence of financial repression
For the advanced economies, real interest rates were negative roughly $\frac{1}{2}$ of the time during 1945-1980.

“Financial repression” was most successful in liquidating debts when accompanied by a steady dose of inflation.

Average annual interest expense savings as a percent of GDP (FR tax) ranged from about 1 to 5 percent of GDP for the full 1945-1980 sample.
The incidence of negative real short-term interest rates in advanced economies, 1945-2016

Rates are on 3-month T-bills or 2-year bonds advanced economies, 1945-2016.

Percent of observations

Real Interest rate on T-bills

Share of observations at or below:

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 percent</td>
<td>-33.9</td>
<td>-5.7</td>
<td>-28.8</td>
</tr>
<tr>
<td>0</td>
<td>-47.8</td>
<td>-11.3</td>
<td>-57.7</td>
</tr>
<tr>
<td>1 percent</td>
<td>-62.8</td>
<td>-23.1</td>
<td>-85.9</td>
</tr>
<tr>
<td>2 percent</td>
<td>-76.5</td>
<td>-38.8</td>
<td>-95.5</td>
</tr>
</tbody>
</table>
The incidence of negative real long-term interest rates in advanced economies, 1945-2016

(Left scale, tan bars) Share of countries with negative real rates

(Right scale, red bars) Number of countries with negative real rates
"World" Real Short-term Interest Rates, 1870-2016 (September 1)

"World" Real Interest Rate (percent, 3-year moving average)
- UK Discount rate 1870-1919 minus CPI inflation
- US Discount rate 1920-1956 minus CPI inflation
- US Federal Funds rate 1957-2016 minus CPI inflation

Reinhart
Selected post crisis regulatory changes with financial repression features
A very recent US example going into effect in mid-October 2016

- SEC Adopts Money Market Fund Reform Rules
- The new rules require a floating net asset value (NAV) for institutional prime money market funds, which allows the daily share prices of these funds to fluctuate along with changes in the market-based value of fund assets and provide non-government money market fund boards new tools – liquidity fees and redemption gates – to address runs.
Like prior measures, this has increased the demand for government paper. Other examples are numerous...

From prime to government funds

Upcoming reforms prompted a major MMF shift from prime funds to government funds this year.

Source: ICI and Haver Analytics.
What is the end game for the advanced economies?

- Now in 8th year post crisis, there are signs of stabilization and recovery in much of Europe--yet per capita output remains well below its pre-crisis peak in many of the crisis countries (notably Greece and Italy).

- Public debt overhangs usually last more than two decades. (Reinhart, Reinhart and Rogoff, 2012). The combination of sluggish growth and deflation or low inflation does not contribute to their resolution.

- Low and (negative) real interest rates may be necessary to unwind public and private debt loads.

- Write-downs of private debt and some sovereign official debts seems probable.