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Bailing Out the People?
When Private Debt Becomes Public

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“While the focus has been on the Dow Jones and Wall Street, we are addressing the real pain felt by Mr. and Mrs. Jones on Main street. They are why we must pass this legislation today.”

Nancy Pelosi, Statement in support of the Emergency Economic Stabilization Act (October 3, 2008)
Apparent “debt migration” after the GFC

Advanced Economies: Gross Debt
(Percent of GDP)

Spain Gross Debt
(Percent of GDP)

Sources: Eurostat; Global Debt Database; and authors’ calculations.

Motivation  Data & Methodology  Results  Causality  Conclusions
The Million Dollar Questions…

- Does Private Deleveraging Always Trigger a Rise in Public Debt?
- Through What Channels?
- When Does Overall Indebtedness Increase?
Unparalleled Coverage of Private Deleveraging

(Number of Episodes)

Global Debt Database
- Building on the Fall 2016 Fiscal Monitor
- 543 episodes
- 153 countries
- 1950-2016
- AEs, EMEs, LICs
- Crisis & Non-crisis

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>9</td>
</tr>
<tr>
<td>Myanmar</td>
<td>8</td>
</tr>
<tr>
<td>Argentina</td>
<td>8</td>
</tr>
<tr>
<td>Canada</td>
<td>6</td>
</tr>
<tr>
<td>Japan</td>
<td>4</td>
</tr>
<tr>
<td>United States</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td>3</td>
</tr>
</tbody>
</table>
Private Debt and Leverage Flows in the United States
(Annual change, percent of GDP)

Sources: Global Debt Database; and authors’ calculations.

Motivation  Data & Methodology  Results  Causality  Conclusions
A Descriptive Framework to Tell the Story of Deleveraging

Private Debt and Leverage Flows in the United States
(Annual change, percent of GDP)

Sources: Global Debt Database; and authors’ calculations.

Gourinchas and Obstfeld (2012)

\[ y_{it} = \alpha_i + \sum_k \beta_{t+k} T_{ik} + \varepsilon_{it} \]
Private Deleveraging since World War II

Motivation

Data & Methodology

Results

Causality

Conclusions

Sources: Global Debt Database; and authors' calculations.
Note: AEs = advanced economies; EMEs = emerging market economies; LIDCs = low-income developing countries.
The Typical Deleveraging Episode

1. Private Debt
2. Growth
3. Public Debt
4. Total Debt (stock)

Sources: Global Debt Database; and authors' calculations.
Note: The dotted line denotes the 95 percent confidence interval for each conditional mean.
The Private-Public Debt Tango: A Global Phenomenon

Sources: Global Debt Database; and authors’ calculations.

1. Private Debt
2. Real Growth
3. Public Debt
4. Total Debt (Stock)

Advanced economies
Emerging market economies
Low-income developing countries
Advanced Economies: Sources of Change in Public Debt during Private Deleveraging

- CAPB (positive=deficit)
- Macro-flows
- Stock-flow adjustment
- Public debt to GDP

Sources: Global Debt Database; and authors' calculations.
It is NOT just a Crisis Story

Sources: Global Debt Database; and authors’ calculations.

Motivation  Data & Methodology  Results  Causality  Conclusions
The “Unsuccessful” Deleveraging

1. Private Leverage Flows
2. Real Growth
3. Public Debt
4. Total Debt

Sources: Global Debt Database; and authors’ calculations.
Note: The dotted line denotes the 95 percent confidence interval for each conditional mean.

Motivation Data & Methodology Results Causality Conclusions
Fiscal Policy to the Rescue?

1. Change in Public Debt
2. Real Growth
3. Total Debt (Stock)

Sources: Global Debt Database; and authors' calculations.

Motivation  Data & Methodology  Results  Causality  Conclusions
Establishing Causality: a “Doubly Robust” Approach

Recast private deleveraging into a dichotomous “treatment”

Estimate the causal impact of private deleveraging using IPWRA

Inverse Propensity Weighting (IPW)
- Step 1: Estimate the probability (p) of receiving the treatment
- Step 2: Weigh each country by 1/p

Regression Adjustment (RA)
- Step 1: Fit a linear model of growth and public debt
- Step 2: Use predictions from the latter as counterfactuals
Our Specification

Private deleveraging
- Lagged growth
- Lagged GDP per capita
- Crisis in the last 5 years
- Lagged private and public debt
- 3-yr cum. growth private and public debt
- Lagged private interest rates

Growth
- Lagged growth
- Lagged GDP per capita
- Lagged institution quality (RofL)
- Lagged inflation
- Lagged openness
- Lagged private and public debt

Public debt
- Lagged growth and GDP per capita
- Crisis in the last 5 years
- Lagged private and public debt
- Lagged public interest rates
- Lagged aged dependency ratio
- Lagged institution quality
- Lagged fractionalization
Causality Running from Private Deleveraging

Sources: Global Debt Database; and authors’ calculations.
Conclusion

You May End-up Paying your Neighbor’s Mortgage

...even Without a Crisis

Implications for Debt Sustainability
The 2010 Growth Accident

Sources: Global Debt Database; and authors’ calculations.
Note: The dotted line denotes the 95 percent confidence interval for each conditional mean.

Motivation | Data & Methodology | Results | Causality | Conclusions
Overlap and specification tests

Effects of Private Deleveraging on Past Growth and Public Debt

<table>
<thead>
<tr>
<th></th>
<th>Fixed-effects</th>
<th>IPWRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP Growth (-2,-1)</td>
<td>-0.013***</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Growth public debt (-2,-1)</td>
<td>-1.959</td>
<td>1.865</td>
</tr>
<tr>
<td></td>
<td>(2.971)</td>
<td>(1.205)</td>
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<tr>
<td>GDP Growth (-3,-1)</td>
<td>0.010***</td>
<td>-0.003</td>
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<tr>
<td></td>
<td>(0.004)</td>
<td>(0.003)</td>
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<tr>
<td>Growth public debt (-3,-1)</td>
<td>-1.761</td>
<td>1.257</td>
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<tr>
<td></td>
<td>(3.123)</td>
<td>(1.354)</td>
</tr>
<tr>
<td>GDP Growth (-4,-1)</td>
<td>0.017***</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Growth public debt (-4,-1)</td>
<td>-3.235</td>
<td>0.959</td>
</tr>
<tr>
<td></td>
<td>(3.644)</td>
<td>(1.551)</td>
</tr>
<tr>
<td>GDP Growth (-5,-1)</td>
<td>0.029***</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Growth public debt (-5,-1)</td>
<td>-7.318*</td>
<td>-0.644</td>
</tr>
<tr>
<td></td>
<td>(4.300)</td>
<td>(1.688)</td>
</tr>
</tbody>
</table>

Sources: Global Debt Database; and authors’ calculations.

Distribution of Estimated Propensity Scores