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Asia Chartbook:

Crises, Credit and Debt, 1835-2013

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This Chartbook is a companion piece to Carmen M. Reinhart and Takeshi Tashiro (2013) “Crowding Out Redefined: The Role of Reserve Accumulation,” a paper was prepared for Prospects for Asia and the Global Economy 2013 Asia Economic Policy Conference Federal Reserve Bank of San Francisco November 3-5, 2013.
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</thead>
<tbody>
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</tr>
<tr>
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</tr>
<tr>
<td>31.</td>
<td>Singapore: Domestic Credit, Default and Banking Crises, 1963-2013:Q2</td>
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<tr>
<td>32.</td>
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<tr>
<td>34.</td>
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</tr>
<tr>
<td>35.</td>
<td>Thailand: Domestic Credit and Banking Crises, 1970-2013:Q28</td>
</tr>
</tbody>
</table>
I. Key to Charts and Methodology Notes

For working definitions of banking, currency, debt, and inflation crises, see the extensive discussion in Reinhart and Rogoff (2009a and 2010). As to the crises highlighted in the country profiles, our focus is on primarily external sovereign default (also its less common counterpart—domestic sovereign default) and banking crises. Many countries have a rich history of recurring (and often chronic) exchange rate crashes and inflation crises, particularly (but not exclusively) in post World War II Latin America. We only provide limited information on these recurring follies in monetary history.\(^1\) We do include, highlight and date all hyperinflation episodes, as these have been associated with the complete or near complete liquidation (through de facto default) of domestic currency debts.

**Key to charts**

Besides the events discussed above, in a few charts we highlight “near-default” episodes, which involve some form of international assistance to avoid a default or a restructuring. Their dates are also listed in the first column of the accompanying table. Some examples of sub-sovereign defaults (by states or provinces) are also flagged. In a few charts, historic currency crashes (such as the collapse of an 80-year old peg) are highlighted as well. More mundane episodes of inflation and currency crises are not shown. However, the full sample incidence (share of years) in an inflation crisis, is reported in the table below the chart, so as to provide information on chronic inflation problems.\(^2\) The major output collapses shown in the tables that accompany the charts and the numerous IMF programs since 1952 (listed as a memorandum item at the bottom of the table) are not depicted in the figures, to avoid compromising clarity.

Table 1. Coloring and Shading to Highlight Events in Country Charts

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1 In the tables that accompany each country profile, we do provide, as summary statistic on inflation crises, the share of years with annual inflation above 20 per cent per annum. This inflation performance also gives a reasonable indication of the incidence of currency crashes,
2 For evidence on the correlation and overlap between currency crashes and inflation crises, see Reinhart and Rogoff (2010).
Insets of smaller tables and charts into the figures

Insets are used throughout to provide complementary information to that shown in the main figure. For example, for many advanced economies, an inset plots for household credit to GDP from the mid-1990s to the present to highlight trends in private debts ahead of the 2007-2008 crisis. In other cases, these insets provide information on the maturity composition of the debt (public or private, as the case may be) on the eve of a banking crisis be it default or hyperinflation. The distribution of public and private debt before and after a crisis also provide documentation of the numerous crisis cases where the government assumed important quantities of private debts.

Descriptive statistics in the tables to each country

Descriptive statistics are mostly self-explanatory, but two particulars merit explanation. The first year of banking crises are listed and those shown in italics indicate that the episode in question was not deemed to be a systemic crisis. Near default episodes are also shown in italics and not counted in the tally of default. The last column provides information on the largest annual output declines, usually the top five, but more or less when relevant. Both the year and the percent decline (in parentheses) are given. For full output collapse episodes, the interested reader is referred to Barro and Ursua (2009).
The bottom portion of the table gives memorandum items on IMF programs with the country over the period from 1952 to 2009. The first year of the program is listed as well as the total number of programs. The relevant sources are discussed below.

**Debt ratios**

Debt is usually shown as a percent of GDP and in a few cases as a percent of exports. In a handful of cases we have debt data for the earlier part of the 19th century but no GDP or trade measure to scale the debt data by. In those few cases, we show changes in debt (often over three years) to provide an indication of the debt cycle. The nominal GDP data comes from numerous scholars as well as official statistical sources. For a number of developing countries we have more data on exports than for GDP (in all cases we have post World War II nominal GDP data). In these cases the charts show the actual debt/GDP ratio for the period during which GDP data is available (say post 1920s) and use the debt/exports ratio times the average export to GDP ratio (for the period during which both series overlap) to back-cast the series.

**References and sources**

Most charts list the main source as Reinhart and Rogoff (2009), which has an extensive data appendices listing sources series-by-series and country-by-country over different subperiods. Additional sources listed below each graph usually indicate that we came across these sources subsequent to the publication. The sources for the IMF programs are Bird, Hussain and Joyce (2004), Mody and Saravia (2009), and the IMF’s Annual Reports for several years to update these studies through 2009.
Figure 1. China: General Government Debt (domestic plus external) and Banking Crises, 1984-2013 (as a percent of GDP)

Sources: International Monetary Fund, World Economic Outlook, Reinhart and Rogoff (2009) and sources cited therein, and authors’ calculations.

Notes: Data on central government debt outstanding (domestic plus external) is no longer published. Estimates for 2008 and 2009 are based on issuance data for those years.

Default, Restructuring, Banking Crises, Growth Collapses, Hyperinflation and IMF Programs: China, 1850-2012

<table>
<thead>
<tr>
<th>External default/restructuring</th>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyperinflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year (decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921-1936</td>
<td>16</td>
<td>1921</td>
<td>1863</td>
<td>1946-1948</td>
<td>12.9</td>
<td>10.0</td>
<td>1934 (8.7)</td>
</tr>
<tr>
<td>1939-1949</td>
<td>11</td>
<td>1932</td>
<td>1866</td>
<td>1873</td>
<td>1866</td>
<td>1873</td>
<td>1960 (3.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1961 (17.3)</td>
</tr>
</tbody>
</table>

Number of episodes: 2 2 10 1

Memorandum item on IMF programs, 1952-2012

Dates of programs
1981, 1986

Total
2

*No output data from 1939 to 1951.*
Figure 2. China and Hong Kong: External (public plus private) Debt, 1985-2011
(as a percent of GDP)

Figure 3. China: Domestic Credit, Default and Banking Crises, 1978-2013Q2
(end-of-period as a percent of GDP)

Figure 4. India: Central Government (domestic plus external) Debt, Restructuring, Near-default, and Banking Crises, 1835-2012 (as a percent of exports)

Sources: International Monetary Fund, World Economic Outlook, Reinhart and Rogoff (2009), Reinhart (2010), World Bank (2013), International Debt Statistics, Washington DC http://data.worldbank.org/data-catalog/international-debt-statistics. See additional sources listed in Figure x.

Default, Restructuring, Banking Crises, Growth Collapses and IMF Programs: India, 1835-2012 (calculations since independence—1947--reported)

<table>
<thead>
<tr>
<th>External default/restructuring</th>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year (decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1958</td>
<td>1</td>
<td>n.a.</td>
<td>1863</td>
<td>n.a.</td>
<td>11.1</td>
<td>3.2</td>
<td>1891(9.2)</td>
</tr>
<tr>
<td>1969</td>
<td>1</td>
<td>1908</td>
<td>n.a.</td>
<td>1908</td>
<td>1918(12.8)</td>
<td>1920(7.9)</td>
<td></td>
</tr>
<tr>
<td>1972-1976</td>
<td>5</td>
<td>1914</td>
<td>n.a.</td>
<td>1921</td>
<td>1947(17.2)</td>
<td>1947(17.2)</td>
<td></td>
</tr>
</tbody>
</table>

Memorandum item on IMF programs, 1952-2009
Dates of programs

Notes: Near default (italics) not counted in total.
Figure 5. India: Central and General Government (domestic plus external) Debt Restructuring, Near-default, and Banking Crises, 1835-2013 (as a percent of GDP)


Additional sources for debt, exports and GDP:
1835-1839, Source: Brahmananda (2001)
1840-1920, Source: Statistical abstract relating to British India
1913-1979 Sources: League of Nations (various issues) and United Nations (1948) and various issues.
1980-2009 Sources: Jeanne and Guscina (through 1997) and Ministry of Finance
Figure 6. India: Share of Domestic Debt in Central Government Debt, 1835-2012

Figure 7. India: External (public plus private) Debt, Restructuring, Near-default, and Banking Crises, 1970-2013Q1
(as a percent of GDP)

Figure 8. India: Domestic Credit, Restructuring and Banking Crises, 1948-2013Q2
(end-of-period as a percent of GDP)

**Figure 9. Indonesia: Central Government (domestic plus external) Debt, Default, and Banking Crises, 1911-2013Q2**

(as a percent of GDP)

<table>
<thead>
<tr>
<th>Years</th>
<th>Share of private debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1994</td>
<td>14.2</td>
</tr>
<tr>
<td>1995</td>
<td>26.6</td>
</tr>
<tr>
<td>1997</td>
<td>34.8</td>
</tr>
</tbody>
</table>

1966, the *Year of Living Dangerously* inflation hits 940%

*Sources: Creutzberg, P. (1976), Reinhart and Rogoff (2009) and sources cited therein*

Default, Restructuring, Banking Crises, Growth Collapses, Hyperinflation and IMF Programs:
Indonesia, 1800-2012
(calculations since independence—1949—reported)

<table>
<thead>
<tr>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyperinflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year(decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1</td>
<td>n.a.</td>
<td>1997</td>
<td>1992</td>
<td>14.8</td>
<td>31.1</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of episodes:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Memorandum item on IMF programs, 1952-2012

Dates of programs

Total
11
Figure 10. Indonesia: Share of Domestic Debt in Total Central Government Debt, 1972-2013Q2

Figure 11. Indonesia: External (public plus private) Debt, Restructuring, and Banking Crises, 1970-2013Q1
(as a percent of GDP)

"Hidden debts" on the eve of Asian crisis

<table>
<thead>
<tr>
<th>Years</th>
<th>Share of private debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1994</td>
<td>14.2</td>
</tr>
<tr>
<td>1995</td>
<td>26.6</td>
</tr>
<tr>
<td>1997</td>
<td>34.8</td>
</tr>
</tbody>
</table>

During 1997-1998, the exchange rate collapsed by about 235% against the dollar; inflation spikded to 60 percent.

The "twin crisis" was followed by defaults.


Notes: For periods where no quarterly nominal GDP is available, a moving-average interpolation method is used.
Figure 13. Japan: Central and General Government (domestic plus external) Debt, Default, and Banking Crises, 1885-2012
(as a percent of GDP)


Default, Restructuring, Banking Crises, Growth Collapses and IMF Programs:
Japan, 1800-2012

<table>
<thead>
<tr>
<th>External default/restructuring</th>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year (decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1942-1952</td>
<td>11</td>
<td>1946-1948</td>
<td>1872</td>
<td>1945</td>
<td>5.2</td>
<td>11.0</td>
<td>1896(5.5) 1899(7.4) 1920(6.2) 1930(7.3) 2009(5.5)</td>
</tr>
<tr>
<td>1982</td>
<td></td>
<td></td>
<td>1901</td>
<td></td>
<td></td>
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<td>1901</td>
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<td>1907</td>
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<td>1917</td>
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<td>1923</td>
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<tr>
<td>1992</td>
<td></td>
<td></td>
<td>1992</td>
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Number of episodes:

1 1 8 1

Memorandum item on IMF programs, 1952-2012
Dates of programs
1962, 1964

Total 2
Figure 14. Japan: Share of Domestic Debt in Total Central Government Debt, 1875-2012

Figure 15. Japan: Gross External (public plus private) Debt, and Banking Crises, 1970-2013Q1 (as a percent of GDP)

Figure 16. Japan Banking Survey: Domestic Credit and Banking Crises, 1970-2013:Q2
(end-of-period as a percent of GDP, 4-quarter moving average)

Figure 17. Korea: Central Government (domestic plus external) Debt, Near-default, and Banking Crises, 1913-2013Q2 (as a percent of GDP)


Default, Restructuring, Banking Crises, Growth Collapses and IMF Programs: Korea, 1945-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>Duration</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year(decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-1998</td>
<td>2</td>
<td>1983 n.a.</td>
<td>0.0</td>
<td>0.0</td>
<td>15.4</td>
<td>1920(12.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1985</td>
<td></td>
<td>1982(7.1)</td>
<td>1939(10.4)</td>
<td>1997(6.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1997</td>
<td></td>
<td>1951(7.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of episodes: 0 0 3 0

Memorandum item on IMF programs, 1952-2012

Dates of programs


Total 17

Notes: Near default (italics) not counted in total.
Sources: Pre-WWII real GDP, Bassino and van del Eng, (2006).
Figure 18. Korea: Share of Domestic Debt in Total Central Government Debt, 1970-2013Q2

Figure 19. Korea: External (public plus private) Debt, Near-default, and Banking Crises, 1970-2013Q1
(as a percent of GDP)

"Hidden debts" on the eve of Asian crisis

<table>
<thead>
<tr>
<th>Years</th>
<th>Share of private debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1994</td>
<td>18</td>
</tr>
<tr>
<td>1995</td>
<td>19.9</td>
</tr>
<tr>
<td>1997</td>
<td>30.4</td>
</tr>
</tbody>
</table>

Private external debt as a % of GDP

1997-1998 banking crisis

Banking crises (black bars)

1998, near-default/bailout episode (shaded)

Sources: Reinhart and Rogoff (2009) and sources cited therein
Figure 20. Korea: Domestic Credit and Banking Crises, 1970-2012
(end-of-period as a percent of GDP)

Figure 21. Malaysia: Central Government (domestic plus external) Debt, and Banking Crises, 1947-2013Q2 
(as a percent of GDP)


<table>
<thead>
<tr>
<th></th>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapse year(decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.0</td>
<td>0.0</td>
<td>1912(7.2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1985</td>
<td>n.a.</td>
<td>1925(12.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1997</td>
<td></td>
<td>1938(4.9)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1951(5.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1998(7.4)</td>
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<td>0</td>
<td>2</td>
<td>0</td>
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</table>

Memorandum item on IMF programs, 1952-2012
Dates of programs
None
Total
0
Figure 22. Malaysia: Share of Domestic Debt in Total Public Debt, 1947-2013Q2

Banking crises. first year (black lines)

**Figure 23. Malaysia: External (public plus private) Debt, and Banking Crises, 1970-2011**  
(debt as a percent of GDP)

<table>
<thead>
<tr>
<th>Years</th>
<th>Share of private debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-1994</td>
<td>15.8</td>
</tr>
<tr>
<td>1995</td>
<td>32</td>
</tr>
<tr>
<td>1997</td>
<td>32.8</td>
</tr>
</tbody>
</table>

"Hidden debts" on the eve of Asian crisis

Figure 24. Malaysia: Domestic Credit, Default and Banking Crises, 1970-2012  
(end-of-period as a percent of GDP, 4-quarter moving average)


Notes: For periods where no quarterly nominal GDP is available, a moving-average interpolation method is used.
Figure 25. Philippines: Central Government (domestic plus external) Debt, Default, and Banking Crises, 1948-2013Q2 (debt as a percent of GDP)

1983 is the single default episode (shaded)

<table>
<thead>
<tr>
<th>Years</th>
<th>Duration</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year (decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1997</td>
<td></td>
<td></td>
<td></td>
<td>1923 (6.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>1935 (6.8)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1984 (7.3)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1985 (7.3)</td>
</tr>
</tbody>
</table>

Sources: Reinhart and Rogoff (2009) and sources cited therein

Default, Restructuring, Banking Crises, Growth Collapses and IMF Programs: Philippines, 1946-2012

<table>
<thead>
<tr>
<th>Number of episodes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Memorandum item on IMF programs, 1952-2012

Dates of programs

Total 23

Sources: Pre-WWII real GDP, Bassino and van del Eng, (2006).
Figure 26. Philippines: Share of Domestic Debt in Total Public Debt, 1970-2013Q2

1983 is the single default episode (shaded)

Share of domestic debt in total debt

Figure 27. Philippines: External Debt (Public and Private), Default, and Banking Crises, 1970-2013Q1
(debt as a percent of GDP)

Banking crises (black bars)


1983, single default episode (shaded)

Figure 28. Philippines: Domestic Credit, Default and Banking Crises, 1980-2012
(end-of-period as a percent of GDP, 4-quarter moving average)


Notes: For periods where no quarterly nominal GDP is available, a moving-average interpolation method is used.
Figure 29. Singapore: Central Government (domestic and external) Debt, Default, and Banking Crises, 1963-2013Q2 (debt as a percent of GDP)


Notes: Since the mid-1990s all public debts of the central government are domestic.

Default, Restructuring, Banking Crises, Growth Collapses, and IMF Programs: Singapore, 1965-2012

<table>
<thead>
<tr>
<th>External default/restructuring</th>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis dates (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>3 worst output collapses year (decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1982</td>
<td>n.a.</td>
<td>0.0</td>
<td>2.2</td>
<td>1964 (3.5)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2001 (2.4)</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2009 (0.8)</td>
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Number of episodes:

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<th></th>
<th>0</th>
<th>0</th>
<th>1</th>
<th>0</th>
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</table>

Memorandum item on IMF programs, 1952-2009

Dates of programs

None

Total number of years

0
Figure 30. Singapore: Share of Domestic Debt in Total Public Debt, 1970-2013Q2


Notes: Since the mid-1990s all public debts of the central government are domestic.
Figure 31. Singapore: Domestic Credit, Default and Banking Crises, 1963-2013:Q2

Default, Restructuring, Banking Crises, Growth Collapses, and IMF Programs:
Thailand, 1800-2012

<table>
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<tr>
<th>Year(s)</th>
<th>Duration (in years)</th>
<th>Domestic default/restructuring</th>
<th>Banking crisis (first year)</th>
<th>Hyper-inflation dates</th>
<th>Share of years in external default</th>
<th>Share of years in inflation crisis</th>
<th>5 worst output collapses year (decline)</th>
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<td>1997-1998</td>
<td>“near” 2</td>
<td>n.a.</td>
<td>1983</td>
<td>n.a.</td>
<td>0.0</td>
<td>9.0</td>
<td>1919(4.2) 1942(9.0) 1945(6.8) 1998(10.5) 2009(2.3)</td>
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</table>

Number of episodes:

- 0
- 0
- 2
- 0
- 0

Memorandum item on IMF programs, 1952-2009

Dates of programs:


Total number

- 5
Figure 33. Thailand: Share of Domestic Debt in Total Public Debt, 1914-2012

Figure 34. Thailand: Public (domestic and external) and External (public and private) Debts, “Near-default”, and Banking Crises, 1913-2013:Q2 (debt as a percent of exports)

"Hidden" and short-term debts on the eve of Asian crisis

<table>
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<th>Years</th>
<th>Share of external debt</th>
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<td>Private</td>
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<tr>
<td>1985</td>
<td>22.8</td>
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<tr>
<td>1995</td>
<td>39.1</td>
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<td>1997</td>
<td>43.9</td>
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"Hidden debts" on the eve of Asian crisis

<table>
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<tr>
<th>Years</th>
<th>Share of private debt</th>
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<td>1985-1994</td>
<td>23.8</td>
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<tr>
<td>1995</td>
<td>39.1</td>
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<td>1997</td>
<td>43.9</td>
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</tbody>
</table>

Figure 36. Thailand: Domestic Credit and Banking Crises, 1970-2013Q2
(end-of-period as a percent of GDP)

First year of the banking crisis (black line)

Currency collapse, recession and “near default”

References


International Monetary Fund, 2013, Standard Data Dissemination System.

International Monetary Fund, 2013. World Economic Outlook, April and October,


