

# 3. Financial Crises

# 3.1. Characterization

# Summary

- (i) Financial crises
- (ii) Banking crises
- (iii) Twin Crises
- (iv) Costs
  - Fiscal costs – easier to compute
  - Indirect effects on the economy, e.g. on consumption, investment and government revenues, expanding fiscal expenditures and deviating GDP from its trend, as well on asset markets – more difficult to estimate.

# Financial and Banking Crises

- **Financial Markets:** major disruptions in financial markets leading to severe business cycle downturns and characterized by:
  - sharp declines in asset prices;
  - failures of many financial and nonfinancial firms.
  
- **Banking – 2 conditions** (following Laeven, Luc and Fabian Valencia (2018), “Systemic Banking Crises Revisited”, IMF WP/18/206):
  - (i) Significant signs of **financial distress** in the banking system (as indicated by significant bank runs, severe losses in the banking system, and/or bank liquidations).
  - (ii) **Significant banking policy intervention measures** in response to **significant losses** in the banking system.

# Banking Crises

- **Financial Distress** – increases in cost of credit intermediation.\*
- **Significant policy interventions** - if at least 3 out of the following 6 measures have been used:\*

  - 1) deposit freezes and/or bank holidays;
  - 2) significant bank nationalizations;
  - 3) bank restructuring fiscal costs (at least 3% of GDP);
  - 4) extensive liquidity support (at least 5% of deposits);
  - 5) significant guarantees put in place; and
  - 6) significant asset purchases (at least 5% of GDP)".

- **Significant losses:**
  - a country's banking system exhibits significant losses resulting in **NPL ratios > 20% or bank closures of at least 20% of banking system assets**; or
  - **fiscal restructuring costs of the banking sector are sufficiently high (>5% of GDP"**; Laeven and Valencia (2018).

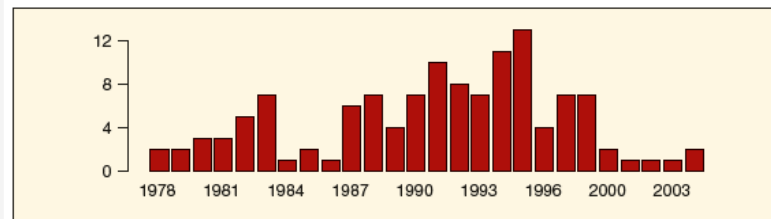
# Banking Crises

## □ Main features:\*

- “Can take a long time to develop, but once they erupt, they tend to spread rapidly, widely, violently, and (seemingly) indiscriminately”.
- “Policymakers also have to account for the risk of a “sudden stop” to economic activity, which can devastate employment, trade, and investment.

\*El-Erian, Mohamed A. (2017), “**The Lost Lesson of the Financial Crisis**”, Project Syndicate, Aug 17.

- Before the subprime crisis, the frequency of banking crises had been slowing down, with the worst year being 1995 when 13 countries suffered banking crises.
- The relative calm before the 2007 crisis led to the misleading conclusion that the world was becoming safer; instead, this period was more like the calm before the storm.



Source Danielsson (2013)

# Banking Crises

- Financial crises keep occurring as financial institutions over-expand during good times, artificially inflating asset prices, creating positive feedback loops between bank lending, market prices and firm profitability (Danielsson (2013)).
- These booms are artificially created by money, not fundamentals and prices end-up so misaligned with the underlying economy that a small shock can trigger a rapid reversal.
- There are, however, country-specific differences:

Shock	Macroeconomic factors		Banking system		Bank-specific factors
	Real economy	Asset prices	Financial liberalisation	Poor regulation	
Switzerland (1991–1996)	✓	✓	✓	×	×
Spain (1978–1983)	✓	✓	✓	✓	×
UK (1991)	✓	×	✓	×	✓
Norway (1988–1993)	✓	✓	✓	✓	×
Sweden (1991–1994)	✓	✓	✓	✓	×
Japan (1994–2002)	✓	✓	✓	✓	×
US (1982–1995)	✓	✓	✓	✓	✓

Danielsson, Jon (2013), Global Financial Systems – Stability and Risk, Pearson.

# Banking Crises

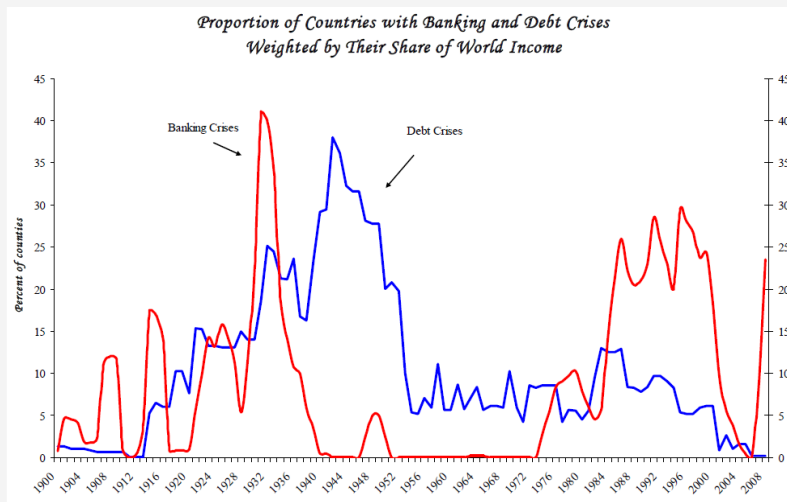
- **These crises were facilitated by the following factors:**
  - (1) all potential sources of market failures are present in banking (externalities, asymmetric information and market power), being magnified in banking due to the fragility of the bank business model, based on maturity transformation.
  - (2) regulation and supervision tends to lag behind financial innovation (e.g. securitization and credit derivatives in the subprime crisis).
  - (3) banks and governments are deeply intertwined due to the money creation role of banks => complex political links between sovereign and bank solvency.
  - (4) Flawed financial liberalization - in the belief that it may promote growth, regulatory restrictions and supervision may be alleviated, but maintaining implicit or explicit government guarantees => moral hazard, as financial institutions may expand their riskier activities (as in the S&L crisis in the US in the 1980s and the Scandinavian crisis in the late 1980s and early 1990s).



# Banking Crises

- The historical frequency of banking crises is quite similar in high- and middle-to-low income countries, with severe fiscal impacts:

→ 3 years after a financial crisis, central government debt increases, on average, by about 86%.



Source: Reinhart, Carmen M. and Kenneth Rogoff (2008), “Banking Crises: An Equal Opportunity Menace”, NBER wp 14587.

- The driving forces behind banking crises are also similar in the different groups of countries - asset price bubbles, large capital inflows and credit booms.

# Banking Crises

## □ Major reasons - 3 views:

- (i) **Random events, unrelated to changes in the real economy** => panics are the result of “mobpsychology” or “mass hysteria” (e.g. Kindleberger (1978)), or self-fulfilling prophecies (Diamond and Dybvig (1983)).

↳ Like Tolstoy’s unhappy families, banking crises are all unhappy in their own ways.

- (ii) **Events motivated by the business cycle** => economic downturns reduce the value of bank assets => higher chance of banks being unable to meet their commitments => depositors anticipate it and withdraw their funds (e.g. Kaminsky and Reinhart (1999)).

# Banking Crises

- (iii) Politics or the institutional framework may facilitate or hinder banking crises – Argentina or USA (repeated crises) vs Canada (no crises):\*
- **“Since the 1920s, the United States has suffered three systemic banking crises** - the widespread bank failures of the Great Depression, the savings and loan crisis of the 1980s, and the subprime crisis of 2007–09 - while **Canada has suffered none**”.
  - “The extraordinary stability of the Canadian banking system has been one of its most visible and oft-noted characteristics for nearly two centuries. **Since 1840 the United States has had 12 major banking crises, while Canada has had none** - not even during the Great Depression. In fact, the last Canadian banking crisis occurred in 1839, and that was the result of contagion from the United States. Even that crisis, which forced Canada’s banks to suspend convertibility of their notes and deposits, produced no bank failures—while hundreds of U.S. banks failed”.

\*according to Calomiris, Charles W. and Stephen H. Haber (2014), “Fragile by Design – The Political Origins of Banking Crisis & Scarce Credit”, Princeton University Press.

# Banking Crises

- “This Canadian achievement is especially remarkable in light of the fact that Canada is a staples-based economy, heavily reliant on exports, and thus largely at the mercy of international variations in its terms of trade. **Canada therefore has tended to have dramatic fluctuations in its business cycles, but these have not translated into banking crises**”.
- “More remarkable still, **the stability of Canada’s banks was accomplished with little government intervention to protect bank liabilities or shore up failing banks**. Indeed, Canada did not found a central bank until 1935, and that was done primarily because farmers in the Canadian West – displaying the understandable inflationist advocacy of commodity-producing debtors—demanded that the government pursue an activist monetary policy during the Great Depression”.

# Banking Crises

- “**Canada**, which shares not only a 2,000-mile border with the United States but also a common culture and language, **had only two brief and mild bank illiquidity crises during the same period, in 1837 and 1839**, neither of which involved significant bank failures. Since that time, some Canadian banks have failed, but the country has experienced no systemic banking crises. **The Canadian banking system has been extraordinarily stable**—so stable, in fact, that there has been little need for government intervention in support of the banks since Canada became an independent country in 1867”.
- How did Canada do it? Part of the answer is that **the Canadian banking system has a very different structure from that of the United States; it is composed of a small number of very large banks with nationwide branches**. This structure has not only allowed Canadian banks to diversify their loan portfolios across regions, it has also allowed them to transfer funds in order to shore up banks in regions affected by an adverse economic shock. Nationwide branch banking has also allowed Canada’s banks to capture scale economies in administration while competing among themselves for business in local markets.

# Banking Crises

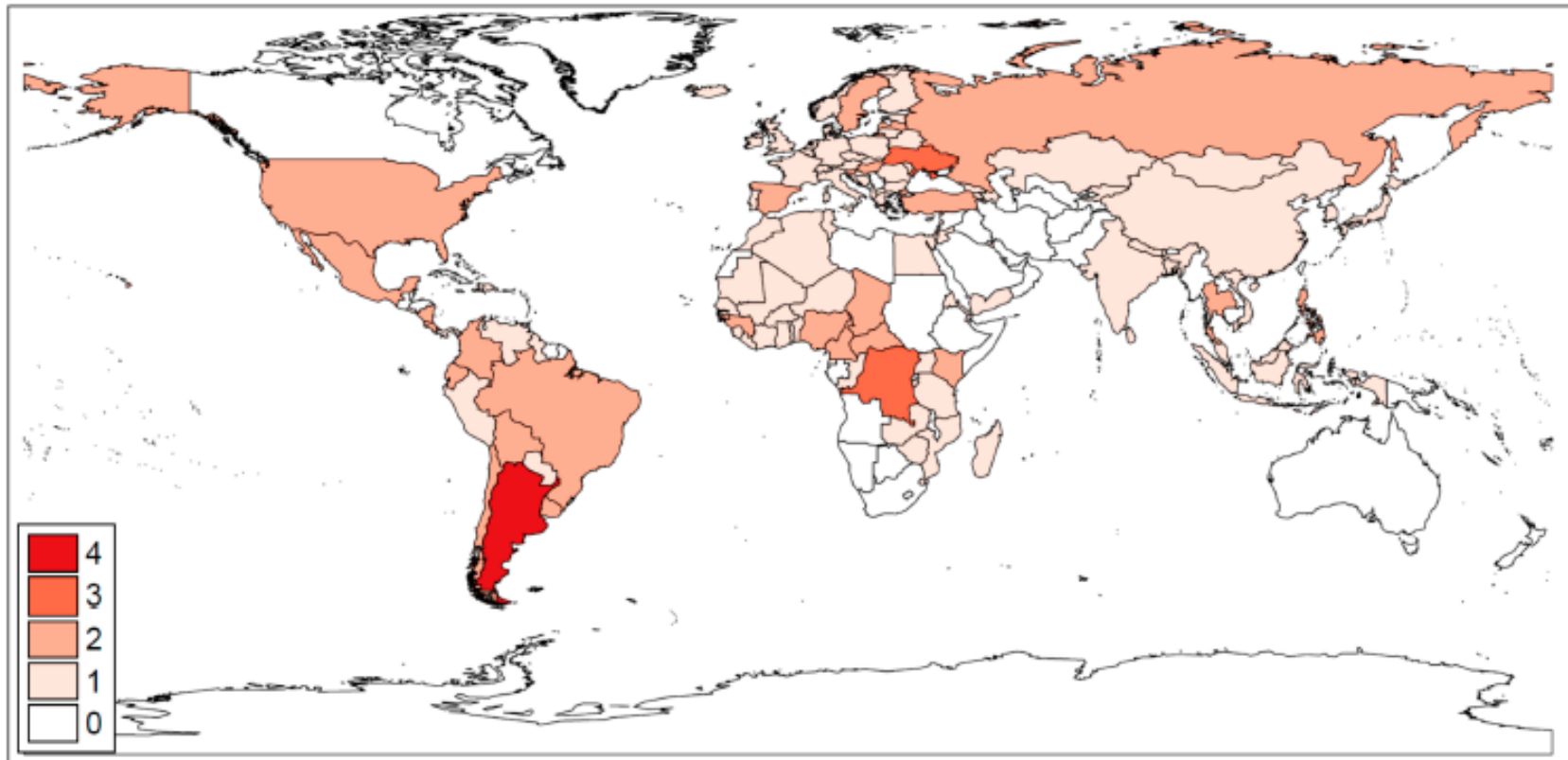
- “Systemic bank insolvency crises (...) do not happen without warning, like earthquakes or mountain lion attacks. Rather, they occur when banking systems are made vulnerable by construction, as the result of political choices”.
- “If such catastrophes were random events, all countries would suffer them with equal frequency. The fact is, however, that some countries have had many, whereas others have few or none. The United States, for example, is highly crisis prone. It had major banking crises in 1837, 1839, 1857, 1861, 1873, 1884, 1890, 1893, 1896, 1907, the 1920s, 1930–33, the 1980s, and 2007–09.1 That is to say, **the United States has had 14 banking crises over the past 180 years!**”

# Banking Crises

- **“Only 34 of those 117 countries (29 percent) were crisis free from 1970 to 2010.** 62 countries had one crisis. 19 countries experienced 2 crises. 1 country underwent 3 crises, and another weathered 4. That is to say, **countries that underwent banking crises outnumbered countries with stable banking systems by more than 2 to 1**, and 18% of the countries in the world appear to have been naturally crisis prone”.\*
- \* Considering “117 nations of the world that have populations in excess of 250,000, are not current or former communist countries, and have banking systems large enough to report data on private credit from commercial banks for at least 14 years between 1990 and 2010 in the World Bank’s Financial Structure Database”.
- **“A country does not “choose” its banking system: rather it gets a banking system that is consistent with the institutions that govern its distribution of political power”.**

# Banking Crises

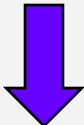
Figure 1. Frequency of Systemic Banking Crises Around the World, 1970–2017



Laeven, Luc and Fabian Valencia (2018), "Systemic Banking Crises Revisited", IMF WP/18/206.



# Banking Crises

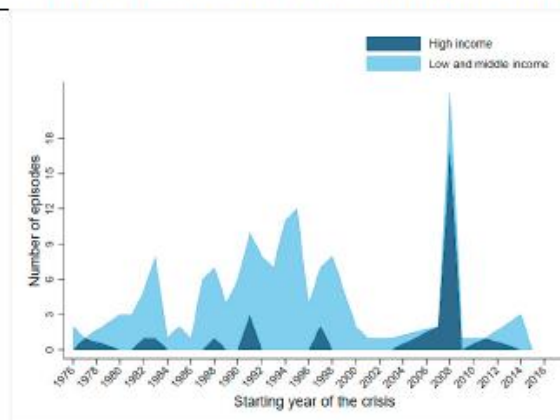
- **One of the reasons for the US to be in this list is the weight of local banks,** that can neither spread risks across regions nor move funds easily from one location to another to manage liquidity problems.
  - This weight was facilitated by the fact that banking issues were decided at a State, not at a Federal, level.
- 
- “The **structure of the Canadian banking system was therefore strikingly different:** from its beginnings, it was characterized by a **small number of very large banks** with extensive national networks of branches”.

# Banking Crises

- According to Laeven and Valencia (2018), “**systemic banking crises are rarely single-country events**, with waves of crises clearly visible in the figure, starting with the episodes in Latin America in the early 1980s, the crises in the aftermath of the breakup of the Soviet Union, the Tequila Crisis, the Asian crisis, and more recently the global financial crisis. The period around the mid-2000s was unusual in terms of the low incidence of crises, which was disrupted by the global financial crisis”.
- According to Danielson (2013), “the relative calm before the 2007 crisis led to the misleading conclusion that the world was becoming safer; instead, this period was more like the calm before the storm”.

Laeven, Luc and Fabian Valencia (2018), “Systemic Banking Crises Revisited”, IMF WP/18/206.

Figure 2. Systemic Banking Crises Episodes by Income Level 1970–2017



Source: Authors' calculations.

# Twin Crises

- Many banking crises are simultaneously currency crises – **twin crises**.
- The average resolution cost for a twin crisis is 23% of annual GDP, vs. 4,5% for a banking crisis alone.

Table A: Selected banking crises: non-performing loans and costs of restructuring financial sectors

	Years	Duration (years)	Non-performing loans (% of total loans) <sup>(a)</sup>	Bank credit/GDP% <sup>(b)</sup>	Fiscal and quasi-fiscal costs / GDP <sup>(c)</sup>	GNP per head (US\$000s) <sup>(d)</sup> PPP	Currency crisis as well <sup>(e)</sup> (pre-fix **)
<b>High-income countries</b>							
Finland	1991-93	3	9.0*	89.9 (89.9)	11.0	15.8	Yes**
Japan	1992-98	7	13.0	119.5 (182.5)	8.0(17) <sup>(f)</sup>	21.5	No
Korea	1997-		30-40	70.3 (82.2)	34.0	14.7	Yes**
Norway	1988-92	5	9.0*	61.2 (79.6)	8.0	17.3	No
Spain	1977-85	9	n/a	68.1 (75.1)	16.8	4.7	Yes
Sweden	1991	1	11.0*	50.8 (128.5)	4.0	17.2	Yes**
United States	1984-91	8	4.0*	42.7 (45.9)	3.2 <sup>(g)</sup>	15.2	No
<b>Average</b>		<b>5.5</b>	<b>13.5</b>	<b>71.8 (97.7)</b>	<b>12.1</b>	<b>15.2</b>	
<b>Medium and low-income countries</b>							
Argentina	1980-82	3	9.0*	29.8 (33.0)	55.3	6.4	Yes**
Argentina	1995	1	n/a	19.7 (20.0)	1.6	10.5	No
Brazil	1994-96	3	15.0	31.7 (36.5)	5-10	6.1	No
Chile	1981-83	3	19.0	58.8 (60.2)	41.2	2.7	Yes**
Colombia	1982-87	6	25.0*	14.7 (14.7)	5.0	2.9	Yes**
Ghana	1982-89	8	n/a	25.2 (25.2)	6.0	0.9	Yes**
Indonesia	1994	1	n/a	51.9 (51.9)	1.8	2.5	No
Indonesia	1997-		65-75	60.8 (60.8)	50-55	3.0	Yes**
Malaysia	1985-88	4	33.0*	64.5 (91.8)	4.7	3.3	No
Mexico	1994-95	2	11.0*	31.0 (36.3)	20.0	7.2	Yes**
Philippines	1981-87	7	n/a	23.2 (31.0)	3.0	2.4	Yes
Sri Lanka	1989-93	5	35.0	21.3 (21.3)	5.0	1.9	No
Thailand	1983-87	5	15.0*	44.5 (48.5)	1.5	1.7	No
Thailand	1997-		46.0	118.8 (134.9)	42.3	6.2	Yes**
Turkey	1994	1	n/a	14.2 (15.3)	1.1	5.4	Yes
Uruguay	1981-84	4	n/a	33.4 (47.8)	31.2	4.6	Yes**
Venezuela	1994-95 <sup>(h)</sup>	2	n/a	8.9 (12.3)	20.0	5.6	Yes
<b>Average</b>		<b>3.7</b>	<b>27.8</b>	<b>38.4 (43.6)</b>	<b>17.6</b>	<b>4.3</b>	
<b>Average all countries</b>		<b>4.2</b>	<b>22.4</b>	<b>48.1 (59.4)</b>	<b>16.0</b>	<b>7.5</b>	
<b>Of which: twin crises</b>		<b>4.1</b>	<b>26.1</b>	<b>46.5 (56.5)</b>	<b>22.9</b>		
<b>Banking crisis alone</b>		<b>4.3</b>	<b>17.7</b>	<b>50.8 (64.2)</b>	<b>4.6</b>		

Source: Hoggarth, Glenn, Ricardo Reis and Victoria Saporta (2001), “Costs of banking system instability: some empirical evidence”, Bank of England working paper.

# Twin Crises

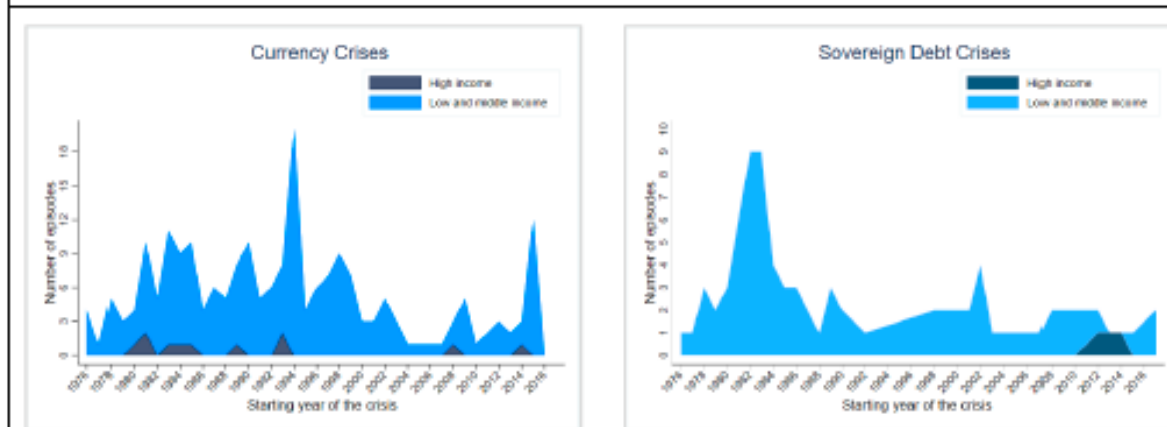
## □ **Banking and Currency crises:**

- (i) In the 1970's, when financial systems were highly regulated in many countries, currency crises were not accompanied by banking crises.
- (ii) However, **after the financial liberalization in the 1980's, currency crises and banking crises became intertwined.**
- (iii) According to Laeven and Valencia (2018), “**currency crises are a rare phenomenon among high-income countries**, including during the global financial crisis, in part due to the reserve currency status of some of these economies”.

# Twin Crises

(iv) “sovereign debt and currency crises tend to coincide or follow banking crises”.

**Figure 3. Currency and Sovereign Debt Crises Episodes by Income level**



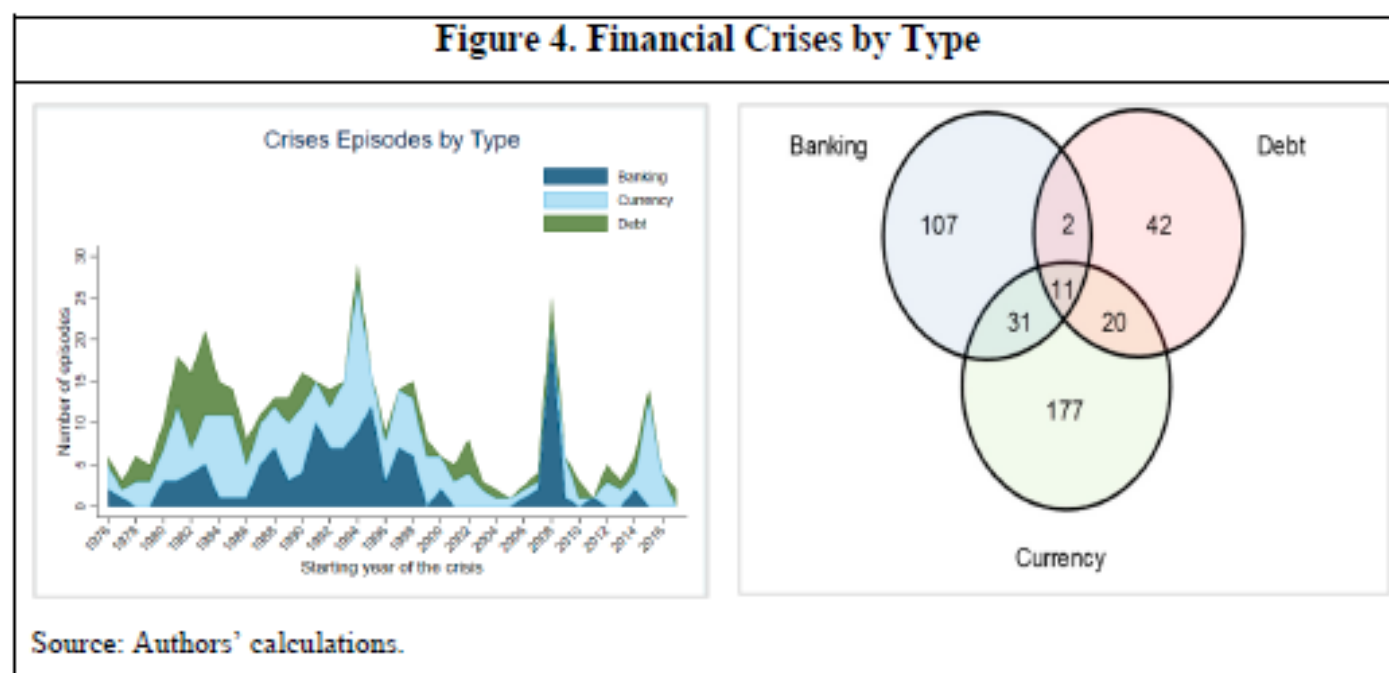
Source: Authors' calculations.

Note: We distinguish high income countries from low and middle-income countries, based on the level of GNI per capita in US\$ in the year in which the banking crisis episode started. The classification is assigned by comparing such level of GNI per capita to the income thresholds defined by the World Bank for that same year.

Laeven, Luc and Fabian Valencia (2018), “Systemic Banking Crises Revisited”, IMF WP/18/206.

# Twin Crises

- Among the crises occurred since the 70's, **the subprime crisis was the most severe banking, currency and debt crisis simultaneously.**



Laeven, Luc and Fabian Valencia (2018), "Systemic Banking Crises Revisited", IMF WP/18/206.

# Twin Crises

- **Asian crisis (end of 90's):**

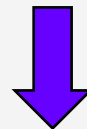
- (i) **much higher resolution costs** - between 40% and 50% of annual GDP ((e.g. in Indonesia and Thailand)



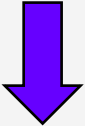
- (ii) **much larger NPLs** - between 45% and 75%.

- **Nordic crisis (early 90's):**

- **cumulative fiscal costs  $\leq$  10% of annual GDP**, notwithstanding widespread bank failures.



# Costs

- **Fiscal costs are typically larger in countries with higher bank intermediation (credit/GDP).**
- 
- 1980's S&L crisis in the US in the 1980s - fiscal costs were estimated at only 3% of annual GDP, as intermediation by financial institutions is relatively low by the standards of developed countries and it only affected a small slice of the financial system.
  - But in other financial crises, the fiscal cost represented more than 50% of the GDP, while other reached output losses close to 70% of the GDP.
  - **Fiscal costs of Financial Crisis often equal to at least 10% of the GDP:**
    - (i) Laeven and Valencia (2008) - 42 crisis episodes, with an **average net fiscal cost of 13% of GDP.**
    - (ii) Haldane (2010) - costs of past financial crises often in excess of 10% of pre-crisis GDP.
    - (iii) Curry and Shibut (2000) - Fiscal cost (net of recoveries) of the 1980s US Savings and Loan Crisis = 124 B\$ (3% of GDP).



# Costs

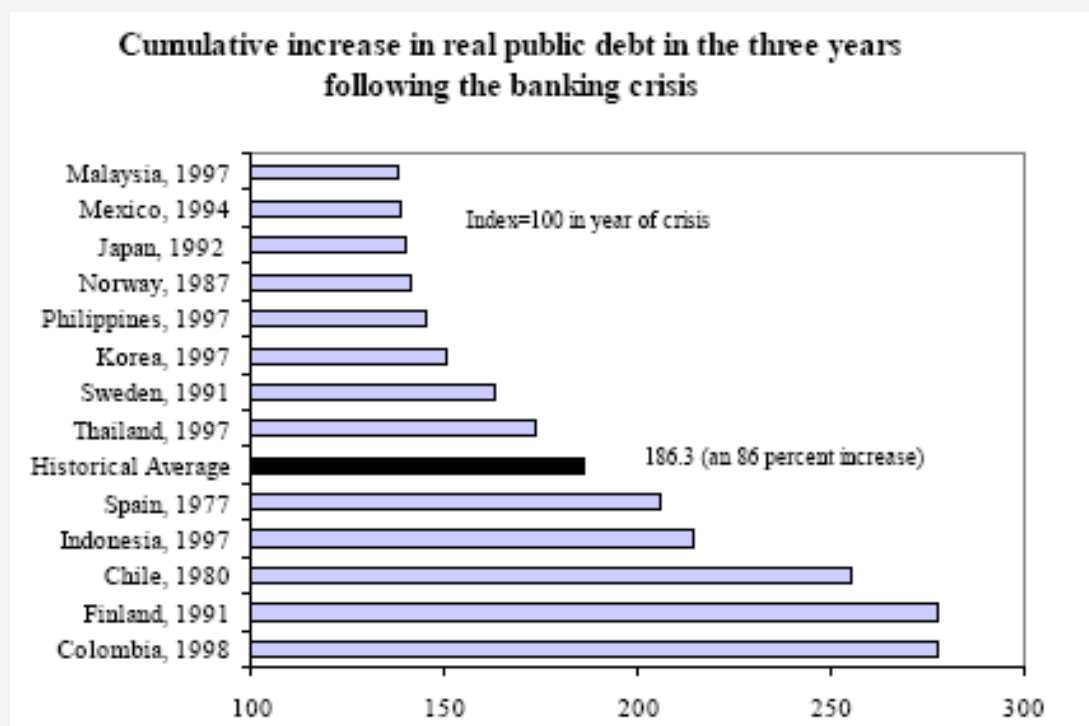
		Fiscal cost	Output loss
Argentina	1980	55.1%	10.8%
Finland	1991	12.8%	59.1%
Indonesia	1997	56.8%	67.9%
South Korea	1997	31.2%	50.1%
Mexico	1994	19.3%	4.2%
Sweden	1991	3.6%	30.6%
Turkey	2000	32%	5.4%
United States	1988	3.7%	4.1%
Venezuela	1994	15%	9.6%

Danielsson, Jon (2013), Global Financial Systems – Stability and Risk, Pearson.

- **Crises have also typically lasted longer in developed countries than in emerging markets** (5,5 vs 3,7 years), due to the higher bank intermediation.
- **Fiscal costs of banking crisis also depend on how crises are overcome** (see Dziobek and Pazarbasioglu (1997)) - **bad or protracted solutions => longer and more severe crises.**

# Costs

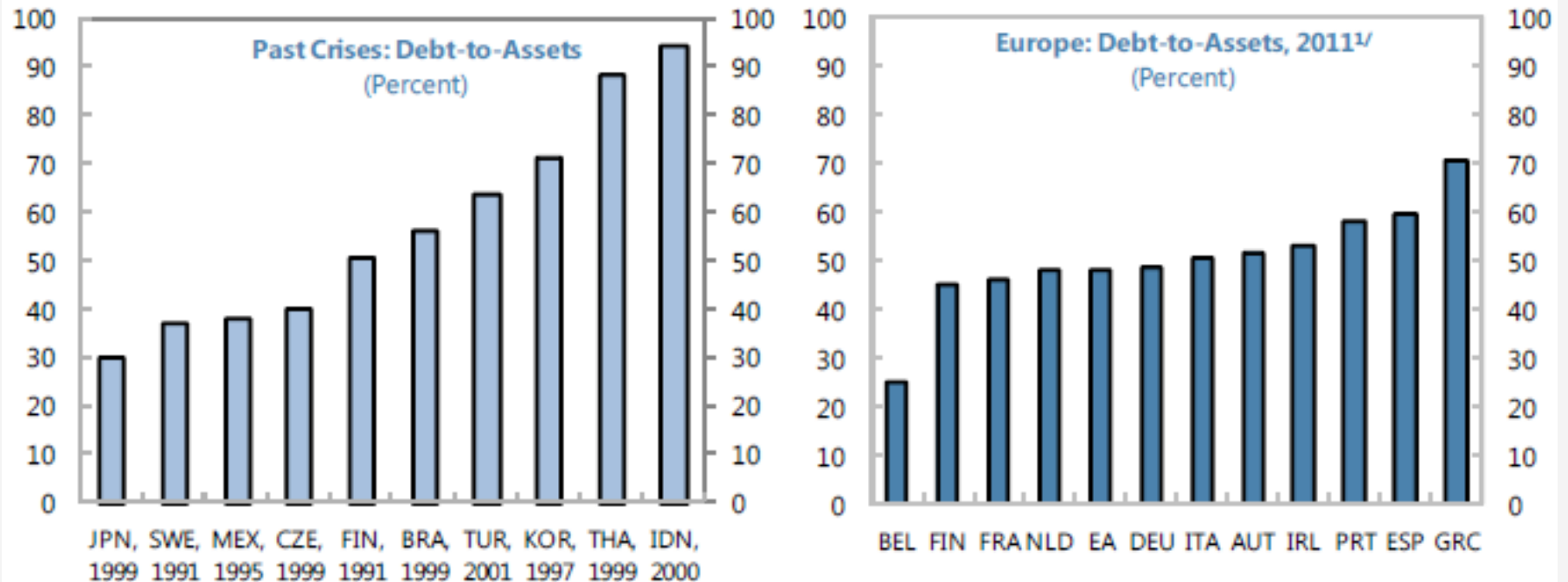
- Therefore, banking crises impact very significantly on **public debt - almost 2x.**



Source: Reinhart, Carmen M. and Kenneth S. Rogoff (2009), "The Aftermath of Financial Crises", American Economic Review, Vol. 99, No.2, May.

# Costs

- The upward behavior of total debt in the subprime crisis was in line with previous financial crises.

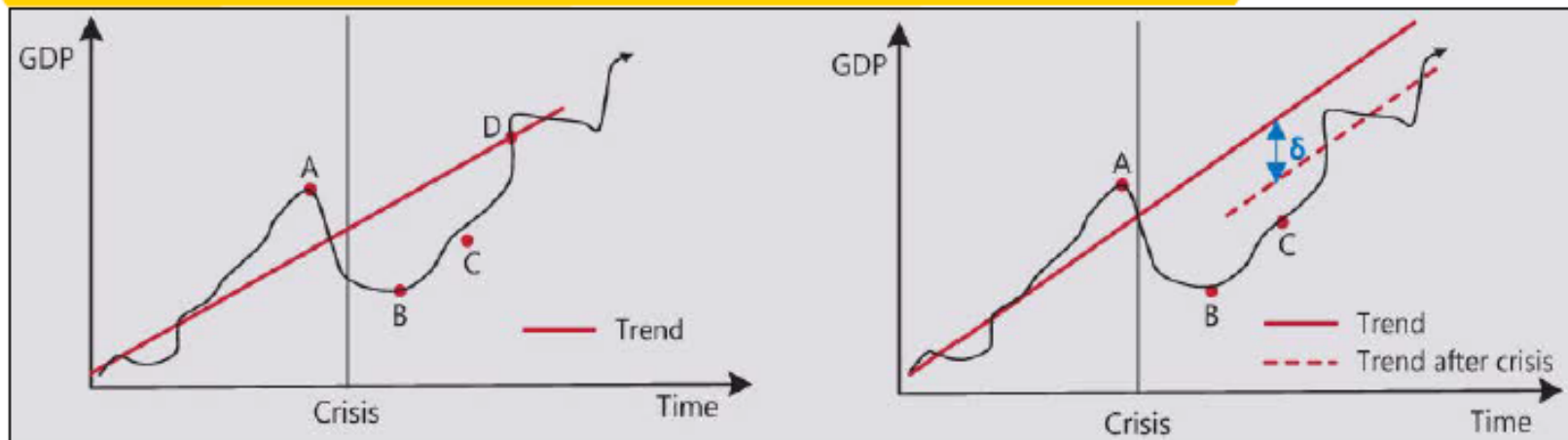


Source: IMF (2013), "Macro-Financial Implications of Corporate (De)Leveraging in the Euro Area Periphery, WP 13/154.

# Costs

- Historically, financial crisis => **severe and protracted output losses.**

**Figure 2** Output loss following a financial crisis (as a percentage of GDP)

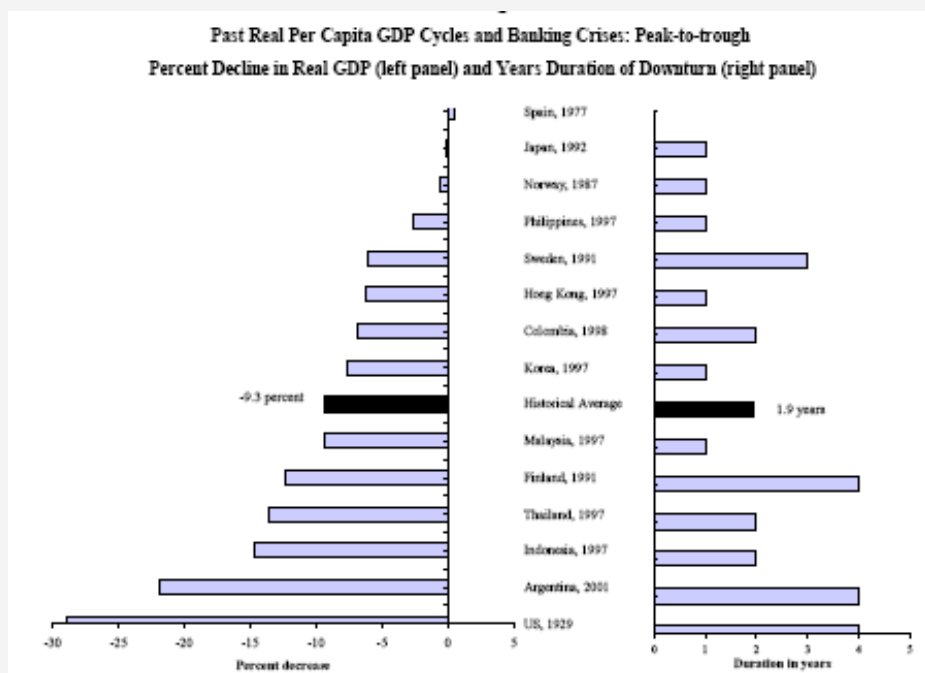


*Note: Point A: pre-crisis peak. Point B: post-crisis trough. Point C: GDP growth equals trend GDP growth for the first time following the crisis. Point D: the level of GDP returns to the pre-crisis level.*

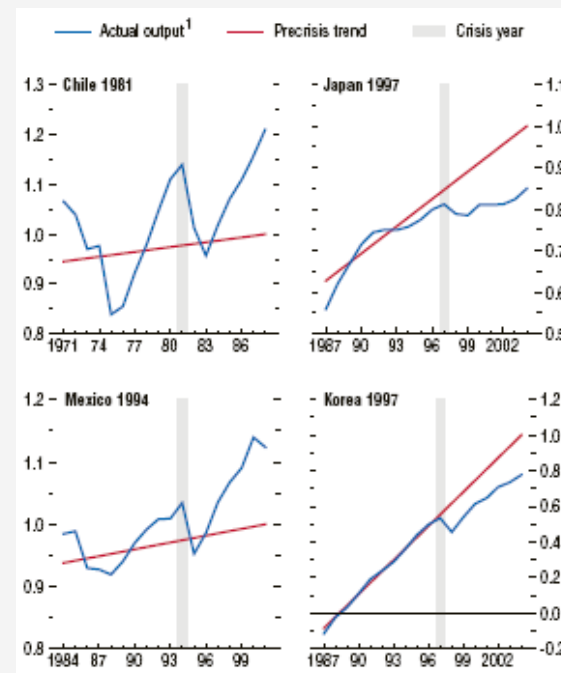
Source: ESRB (2017), "Resolving Non Performing Loans in Europe".

# Costs

- According to Reinhart et al. (2012), banking crises are associated with **lower growth - around -10% on average** (-6% according to Romer and Romer (2017)).



Source: Reinhart, Carmen M. and Kenneth S. Rogoff (2009), "The Aftermath of Financial Crises", American Economic Review, Vol. 99, No.2, May.



Source: IMF (2009), "World Economic Outlook".

# Costs

- Allen and Gale (2004) reached an even higher estimate for output loss – **around 17%** - from the assessment of 43 banking crisis between 1977 and 1998:

## OUTPUT LOSSES ASSOCIATED WITH BANKING CRISES, 1977–98

	Number of crises	Average crisis length (years)	Average cumulative output losses (percentage of GDP)
All	43	3.7	16.9
Single banking crises	23	3.3	5.6
Twin banking and currency crises	20	4.2	29.9
Developed countries	13	4.6	23.8
Emerging market countries	30	3.3	13.9

Source: Allen, Franklin and Douglas Gale (2003), “Competition and Financial Stability”, Journal of Money, Credit and Banking, Vol.36, No.3 (June 2004, Part2)

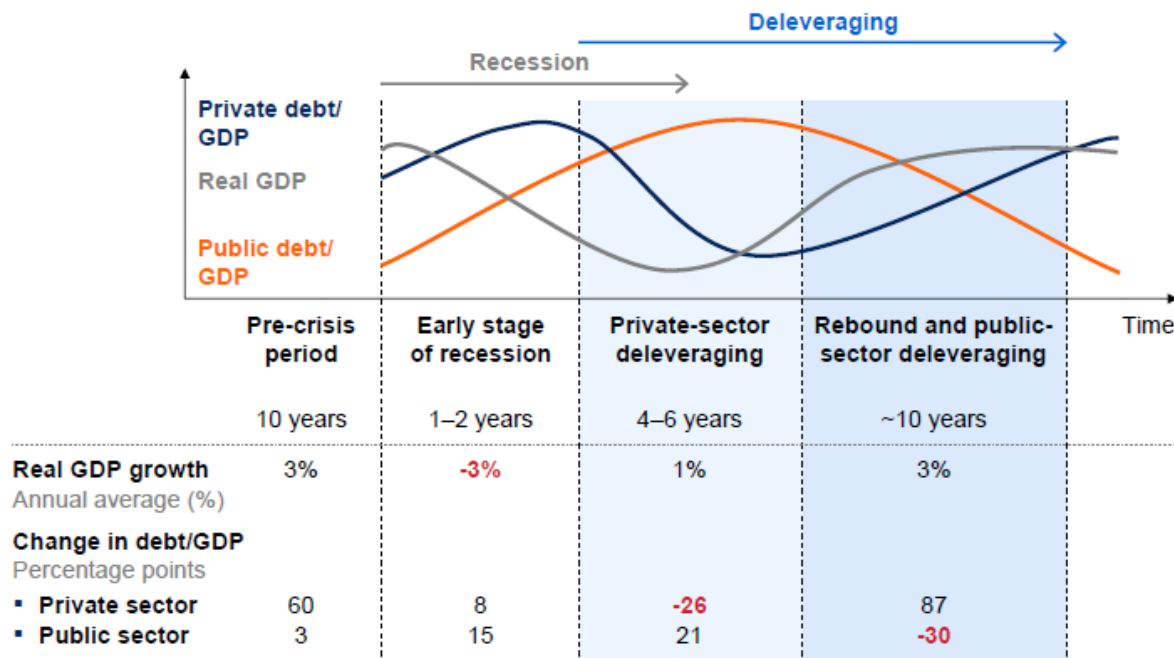
- **Similar results were obtained in Hoggarth et al. (2001)**, where cumulative output losses (relative to trend) incurred in a sample of 47 banking crises were estimated, on average, **between 15%-20% of annual GDP**.

# Costs

- Typically, deleveraging processes after financial crises are long, around 10 years, namely for public debt, ...

Deleveraging typically begins in the private sector, even as government debt continues to grow

Average of Swedish and Finnish deleveraging episodes

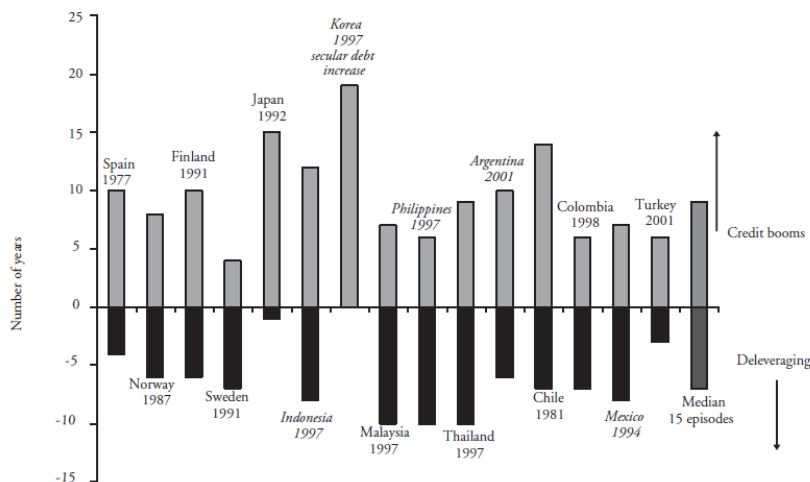


Source: McKinsey (2012), “Debt and deleveraging: Uneven progress on the path to growth”, Jan.

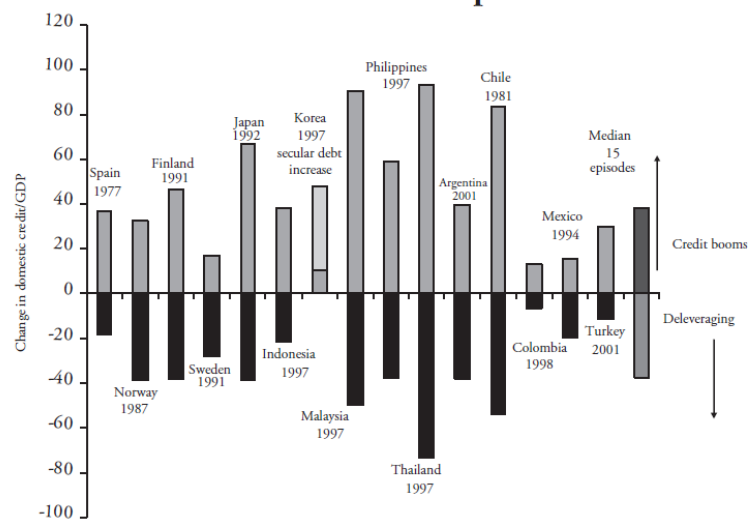
# Costs

- ... and involving severe decreases in bank credit, after huge credit increases – Boom and Bust.

**Domestic Banking Credit/GDP 10 Years Before and 10 Years After Severe Financial Crises: Duration of Boom-Bust Credit Cycles in 15 Post-World War II Episodes**



**Domestic Banking Credit/GDP 21 Years Around Severe Financial Crises: Amplitude of Boom-Bust Credit Cycles in 15 Post-World War II Episodes**

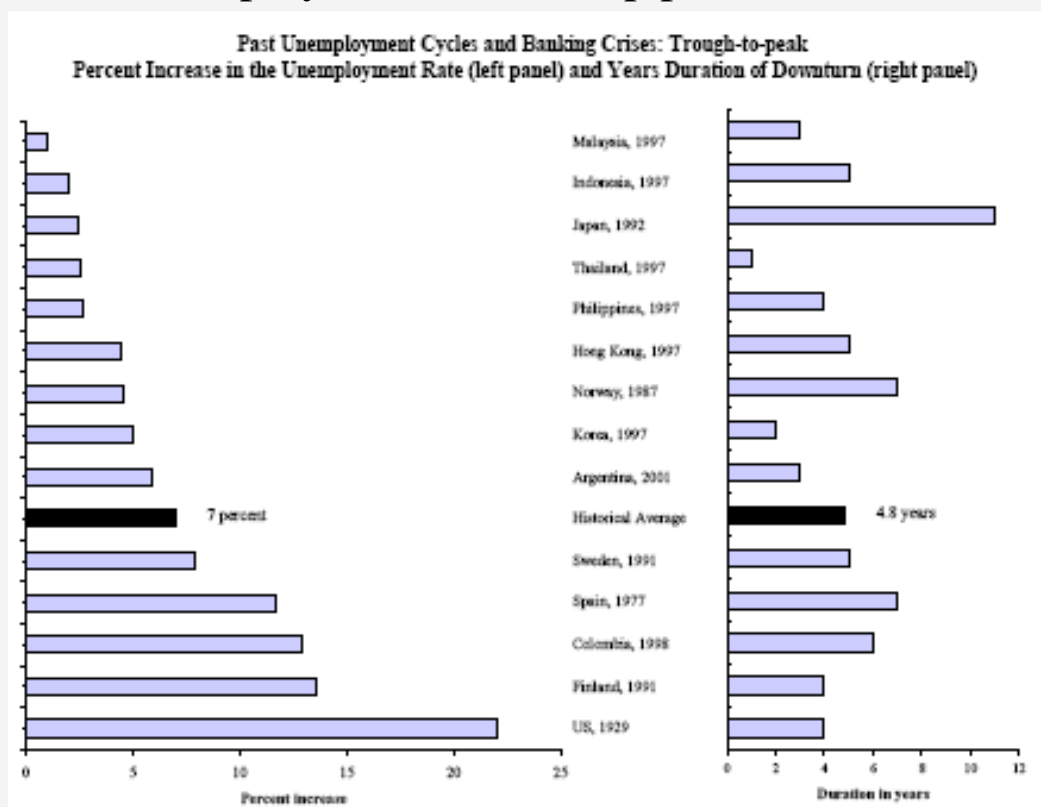


Source: Reinhart, Carmen M. and Vincent R. Reinhart (2010), “After the fall”, FRBKC Jackson Hole Symposium Proceedings, August.



# Costs

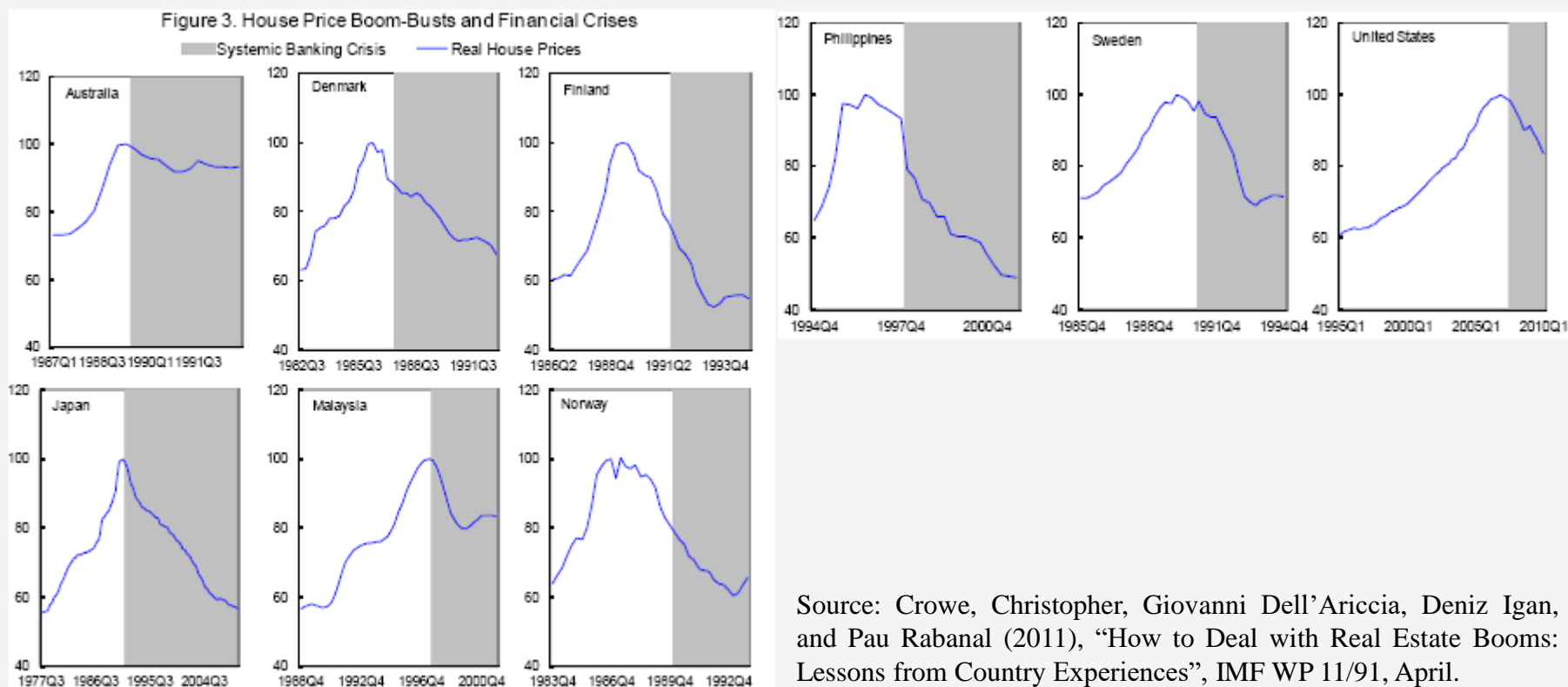
- Financial crises also impact very significantly on **unemployment**, with average increases in unemployment rates of 7 p.p., with these increases lasting around 5 years.



Source: Reinhart, Carmen M. and Kenneth S. Rogoff (2009), "The Aftermath of Financial Crises", American Economic Review, Vol. 99, No.2, May.

# Costs

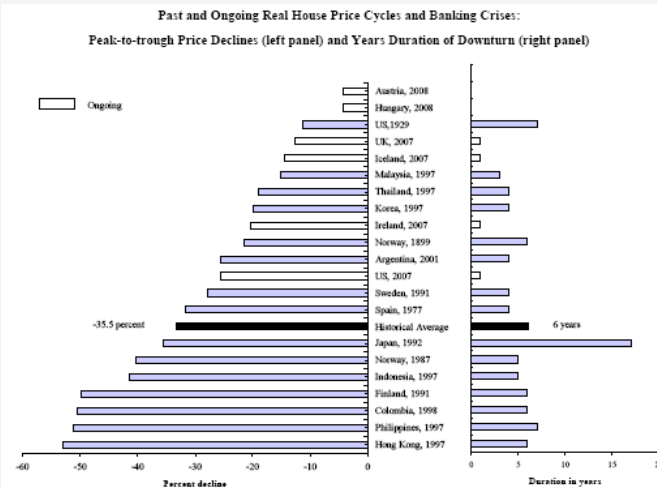
- Several previous financial crisis were triggered by bubbles in the real estate market, that led to severe price falls afterwards, e.g. Japan and the Nordic countries:



Source: Crowe, Christopher, Giovanni Dell’Ariccia, Deniz Igan, and Pau Rabanal (2011), “How to Deal with Real Estate Booms: Lessons from Country Experiences”, IMF WP 11/91, April.

# Costs

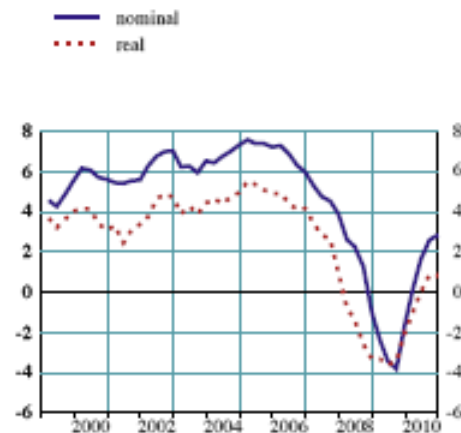
- On average, real estate prices fell by roughly 35% after financial crises, for a period of 6 years.



Source: Reinhart, Carmen M. and Kenneth S. Rogoff (2009), "The Aftermath of Financial Crises", American Economic Review, Vol. 99, No.2, May.

Chart S67 Residential property price changes in the euro area

(Q1 1999 - Q4 2010; percentage change per annum)

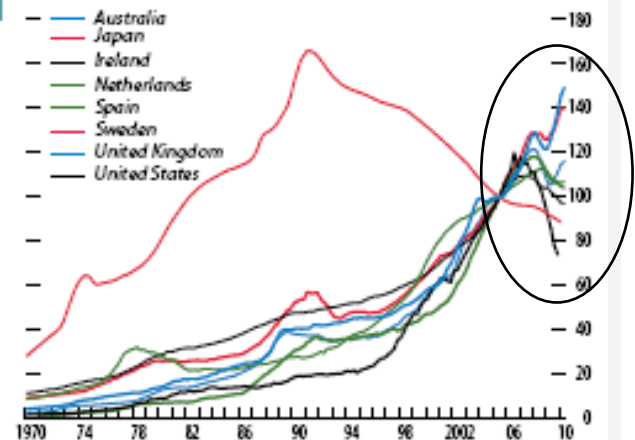


Sources: Eurostat and ECB calculations based on national sources.

Note: The real price series has been deflated by the Harmonised Index of Consumer Prices (HICP).

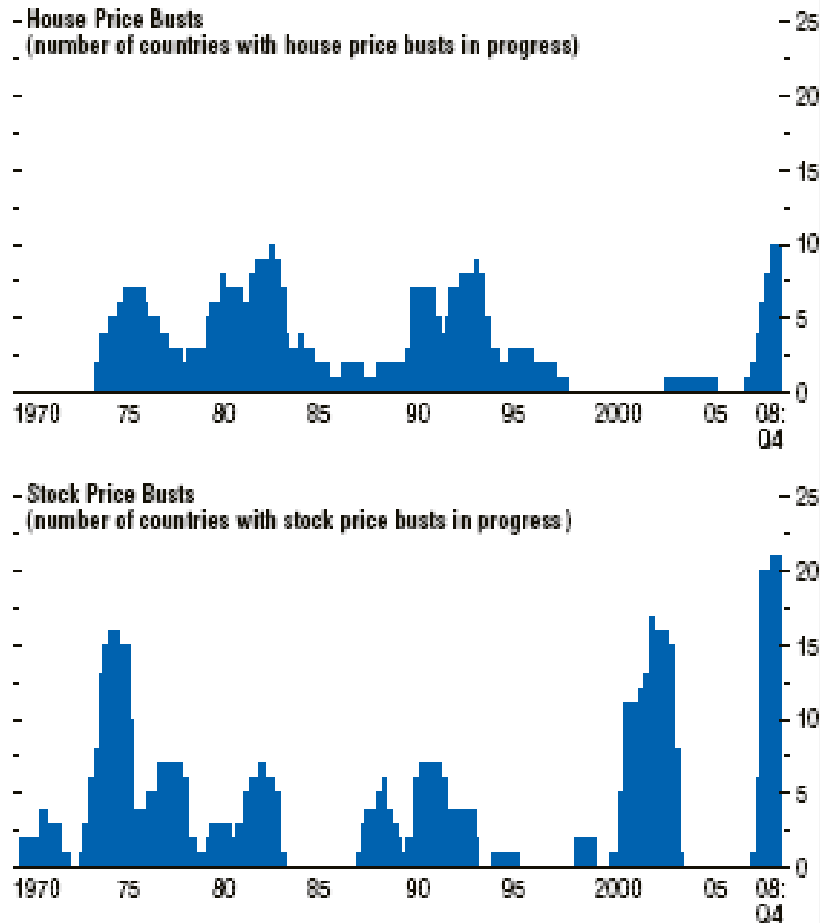
Source: European Central Bank (2011), "Financial Stability Review", June.

Figure 3.1. House Price Indices (2005 = 100)



Source: IMF (2011), "Global Financial Stability Report", April.

# Costs



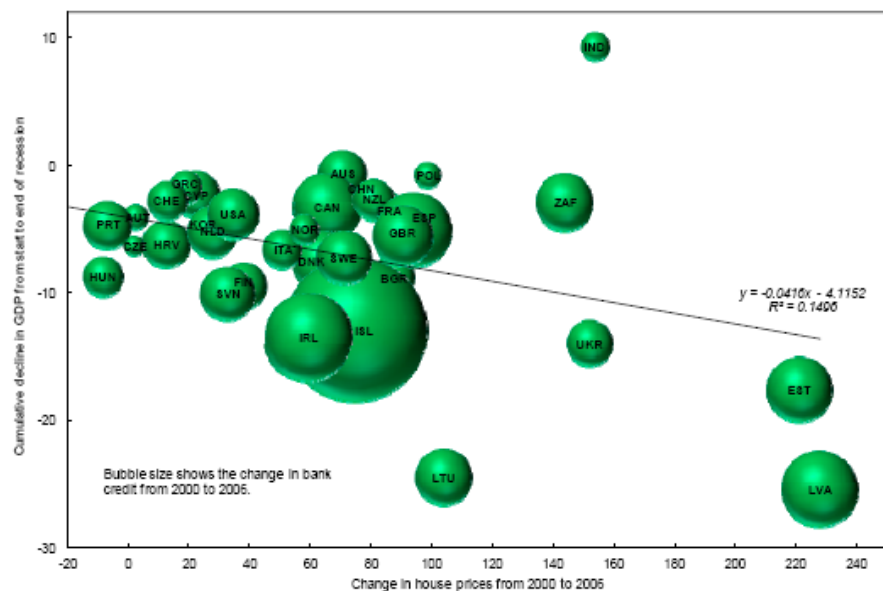
- Some of the previous financial crises, as well as the subprime crisis, were even triggered by simultaneous bubbles in the real estate and in the equity markets.

Source: IMF (2009), “World Economic Outlook”, October.

# Costs

- Bubbles in real estate are usually fed by **excessive credit growth**, increasing the impact of the financial crisis.
- In the subprime crisis, **larger declines in GDP occurred in countries with larger house price increases before**, with many of these also having observed larger credit growth.

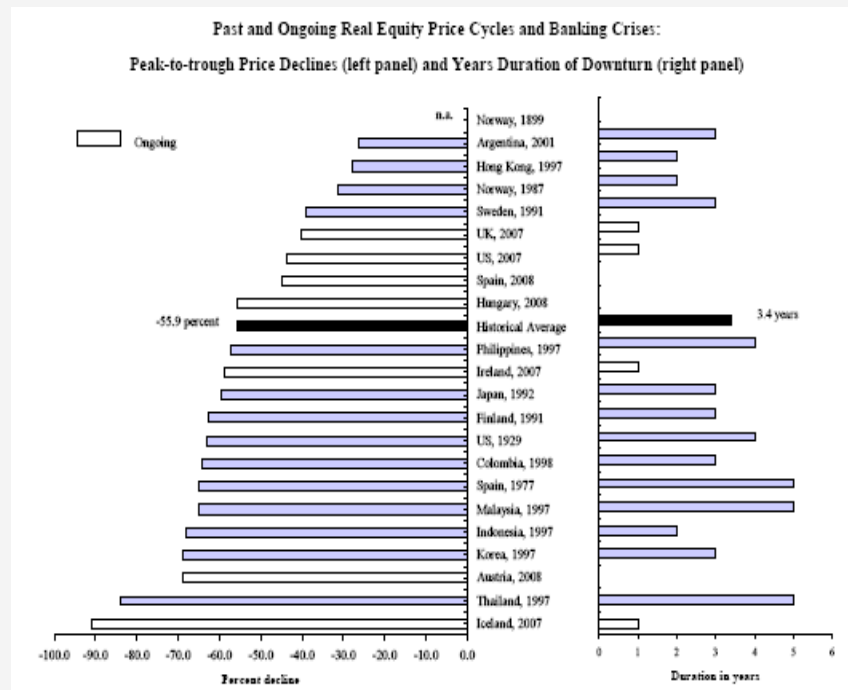
Figure 2. House Price Run-Up and Severity of Crisis



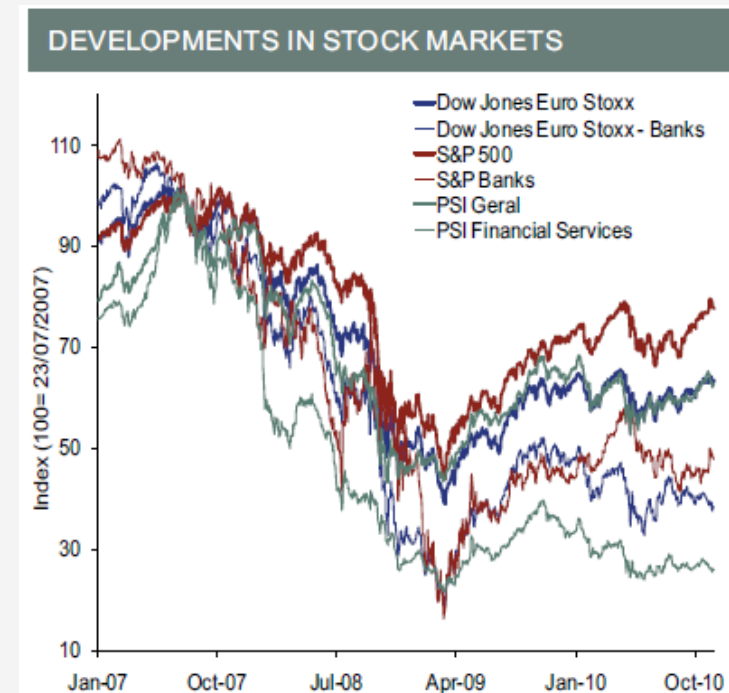
Source: Crowe, Christopher, Giovanni Dell'Ariccia, Deniz Igan, and Pau Rabanal (2011), "How to Deal with Real Estate Booms: Lessons from Country Experiences", IMF WP 11/91, April.

# Costs

- Historically, banking crises also impact very severely on **equity prices** (56% on average, during 3,4 years).



Source: Reinhart, Carmen M. and Kenneth S. Rogoff (2009), "The Aftermath of Financial Crises", American Economic Review, Vol. 99, No.2, May.



Source: Banco de Portugal (2010), "Financial Stability Report", Nov..

# Costs

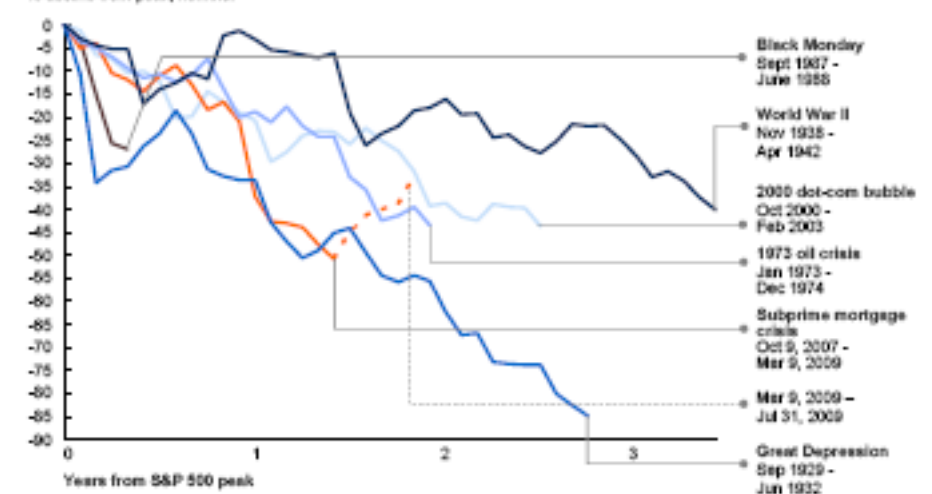
- The impact of the subprime crisis on US stock prices during its initial year was similar to the one in the Great Depression, but its peak-to-through variation reached only -56%, in line with the historical average and substantially less severe than in 1929 (-85%).



Source: Reuters

## The 2008 stock market crash was the most severe since the Great Depression

S&P 500 crashes  
% decline from peak, nominal



Source: McKinsey (2009), “Global capital markets: Entering a new era”.