EE439

From financial crash to debt crisis

crisis

1. Inflation, Hyper Inflation, and Currency Crises
2. Public Debt Crises
3. Banking Crises

3 hypothesis

- External debt surges are an antecedent to banking crises
- Bank crises often precede or accompany sovereign debt crises
- Public borrowing surges ahead of external sovereign default, as government have "hidden debt" that exceed the better document levels of external debt

- Both World and individual country Basis

Outline

- ✓ Big Pictures and Country History
  - Sovereign debt crisis
  - Banking crisis
- ✓ Debt, Banking Crises Evidence (regression)
  - Banking and Debt Crises
  - Public and External debt, Default and banking crises
- ✓ Theoretical underpinnings of the This-Time-Is-Different Syndrome

✓ Big Pictures and Country Histories

- Sovereign debt crisis
- Banking crisis

✓ Big Pictures and Country Histories

▪ Sovereign debt crisis

1

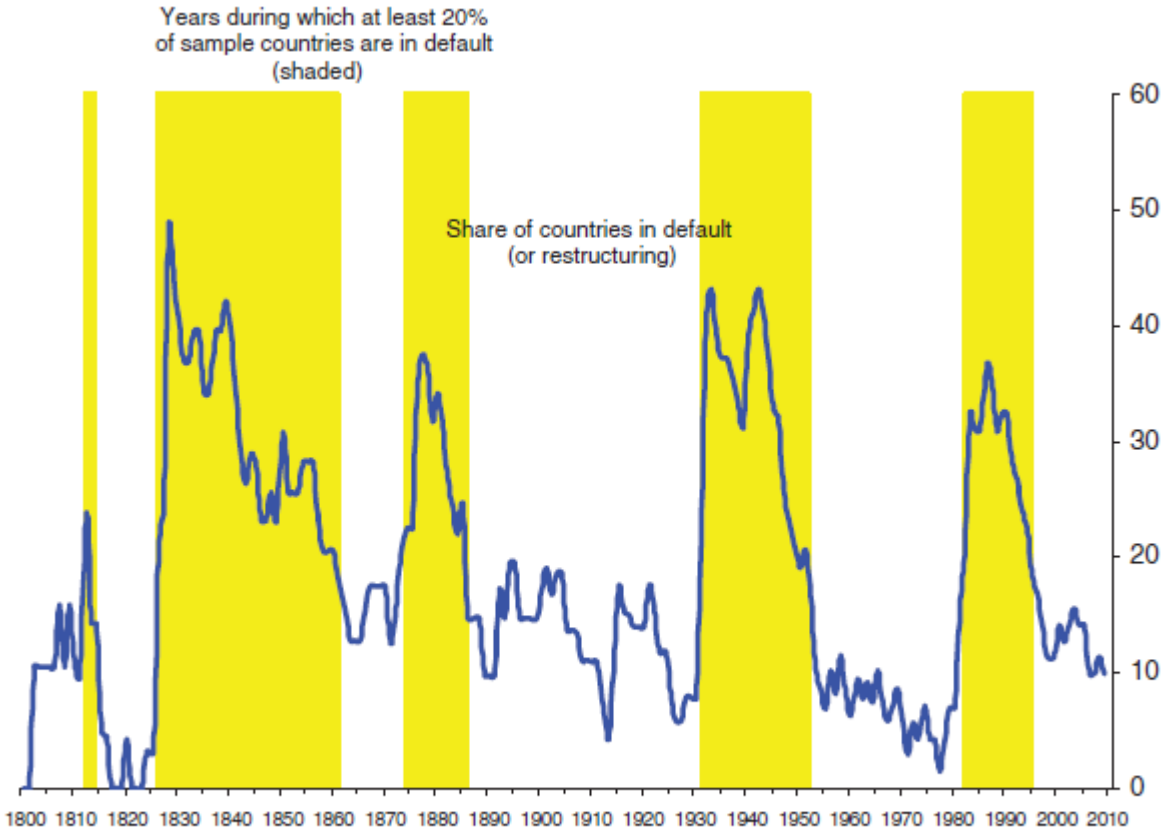


FIGURE 2. GLOBAL SOVEREIGN EXTERNAL DEFAULT CYCLES: 1800–2009
(*share of countries in default or restructuring*)

World

✓ Big Pictures and Country Histories

2

▪ Sovereign debt crisis

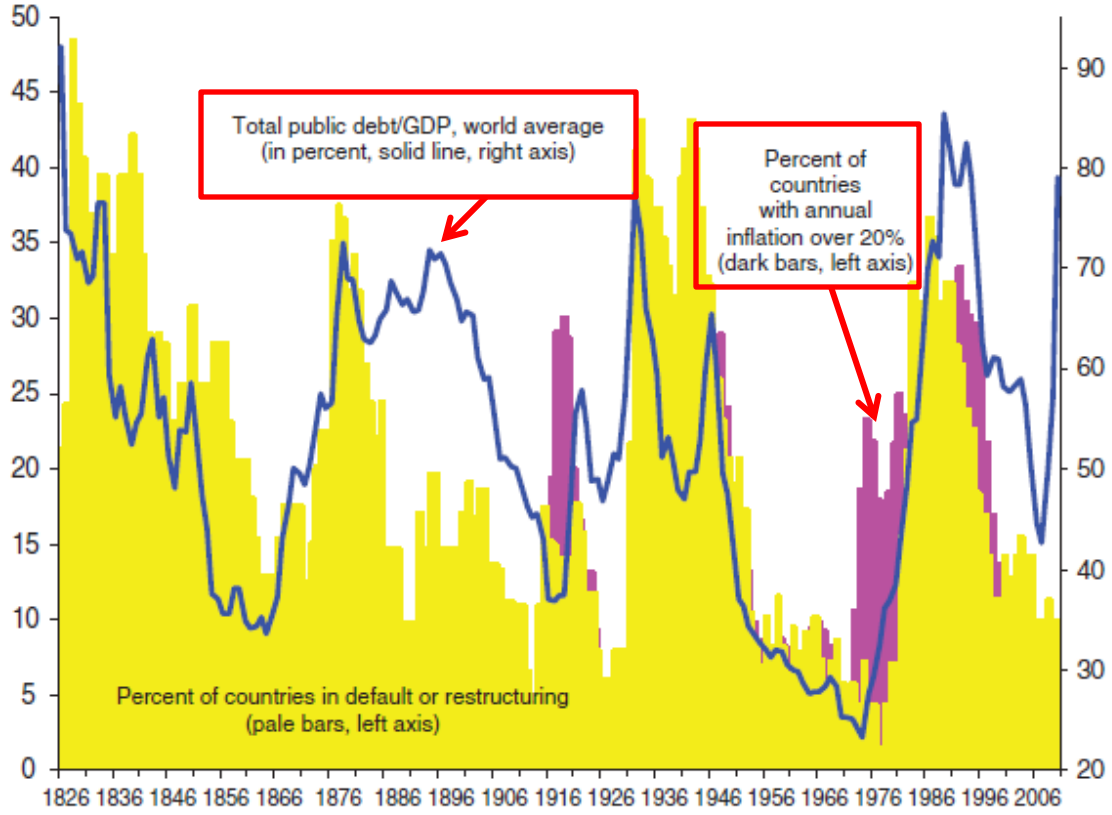


FIGURE 3. SOVEREIGN DEFAULT ON EXTERNAL DEBT, TOTAL (DOMESTIC PLUS EXTERNAL) PUBLIC DEBT, AND INFLATION CRISES: WORLD AGGREGATES, 1826–2010 (*debt as a percent of GDP*)

World

✓ Big Pictures and Country Histories

3

▪ Sovereign debt crisis

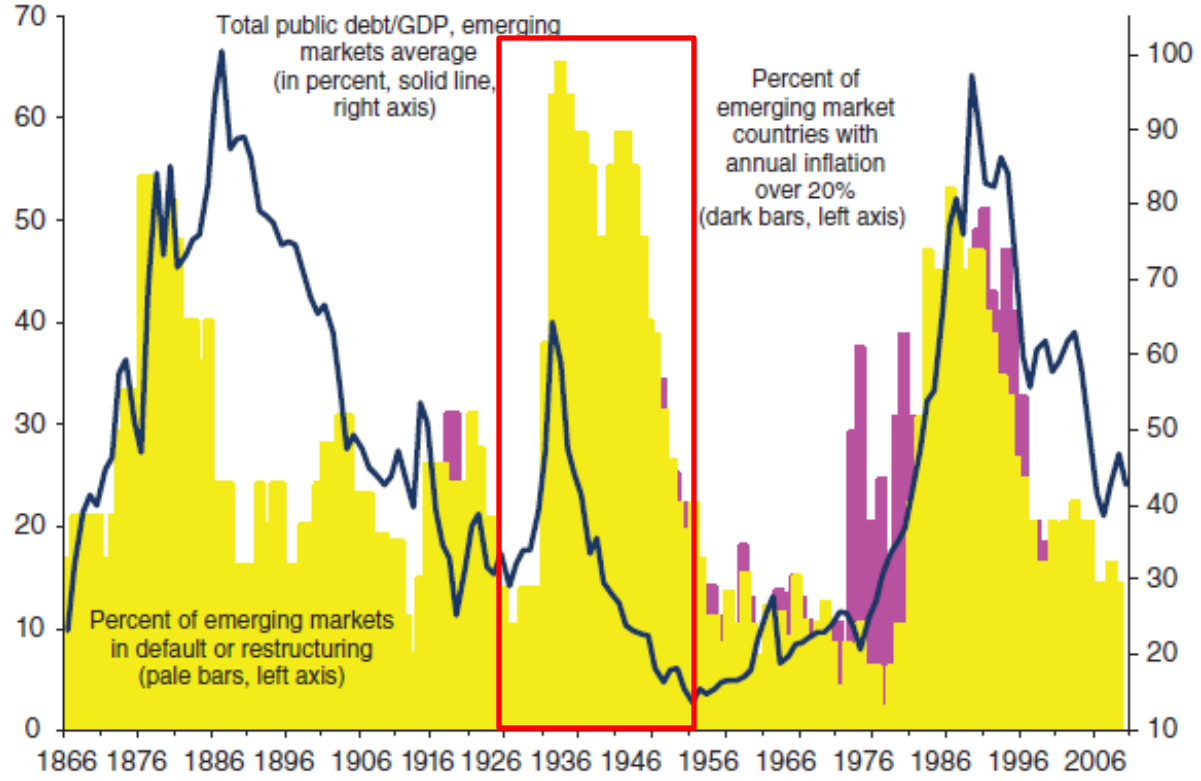


FIGURE 4. SOVEREIGN DEFAULT ON EXTERNAL DEBT, TOTAL (DOMESTIC PLUS EXTERNAL) PUBLIC DEBT, AND INFLATION CRISES: EMERGING MARKETS, 1866–2010 (*debt as a percent of GDP*)

Emerging Market

✓ Big Pictures and Country Histories

- # Sovereign debt crisis

1 There are mainly 5 debt cycles

2 There are correlation between public debt/GDP and percentage of the countries that have public default

3 the serial default is a wider spread phenomenon across emerging market and advanced economies

✓ Big Pictures and Country Histories

▪ Banking crisis

1

✓Serial Banking crises in the advanced economies were the norm

✓Emerging market developed a financial sector in the late 1800s

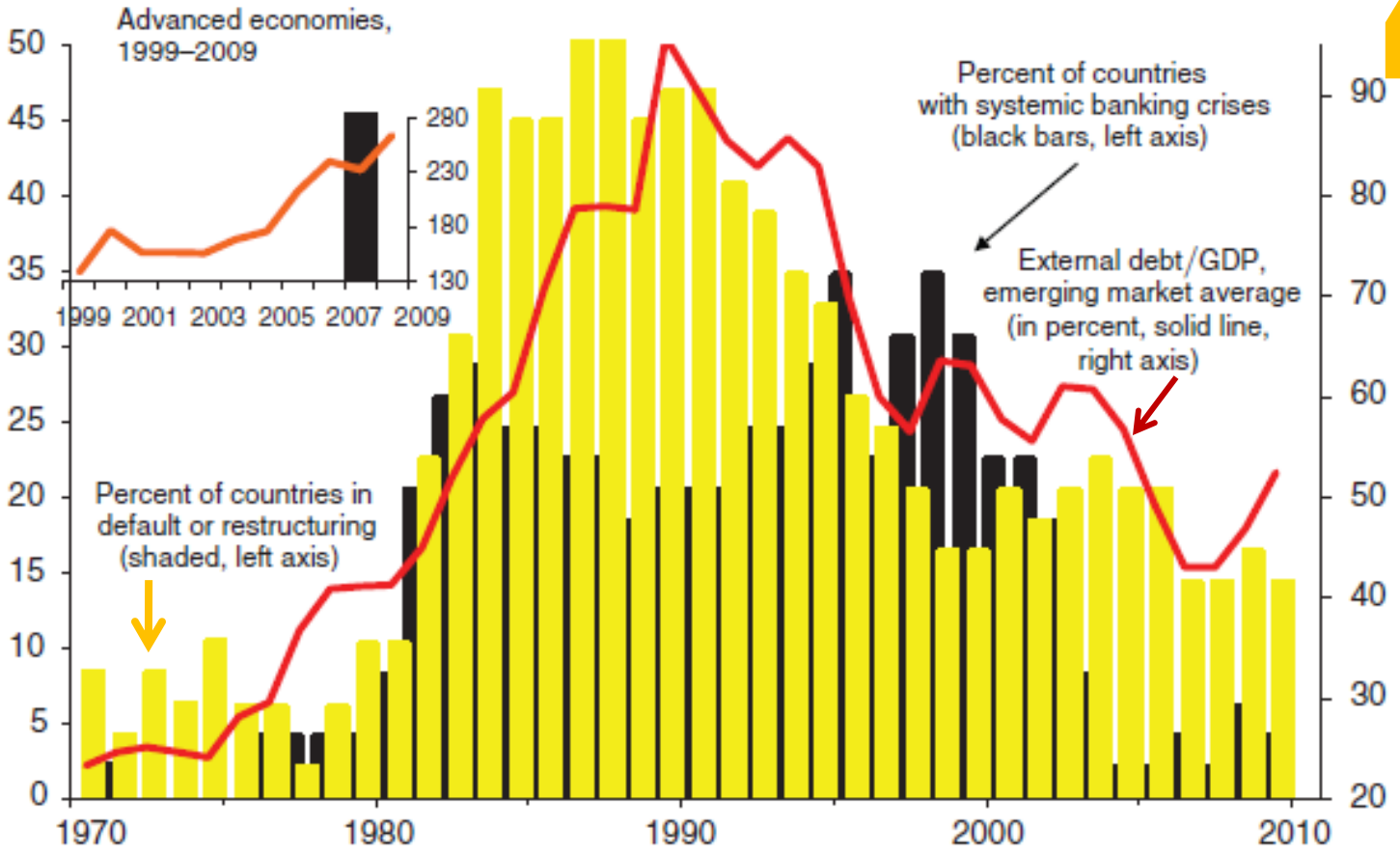
✓These economies joined the serial-banking-crisis club

Despite differences in sovereign default performance,
The incidence of banking crises is about the same
for Advance economies and emerging market

✓ Big Pictures and Country Histories

2

▪ Banking crisis



Emerging Market

✓ Big Pictures and Country Histories

▪ Banking crisis

2

Dependent variable	Emerging markets: share of countries in default or restructur
Sample	1971–2009
Independent variables	OLS (robust errors)	Fractional logit (robust errors)
Emerging markets: external debt/GDP ($t-1$)	*0.574*	*0.013*
p-value	*0.000*	*0.000*
Observations	39	39
R^2	0.615	0.595
Dependent variable	Emerging markets: share of countries in systemic banking crises
Sample	1971–2009
Independent variables	OLS (robust errors)	Fractional logit (robust errors)
Emerging markets: external debt/GDP ($t-1$)	*0.383*	*0.007*
p-value	*0.000*	*0.000*
Observations	39	39
R^2	0.479	0.514

Sources: Reinhart and Rogoff (2009a), sources cited therein, and authors' calculations.

Emerging Market

✓ Big Pictures and Country Histories

3

- Banking crisis

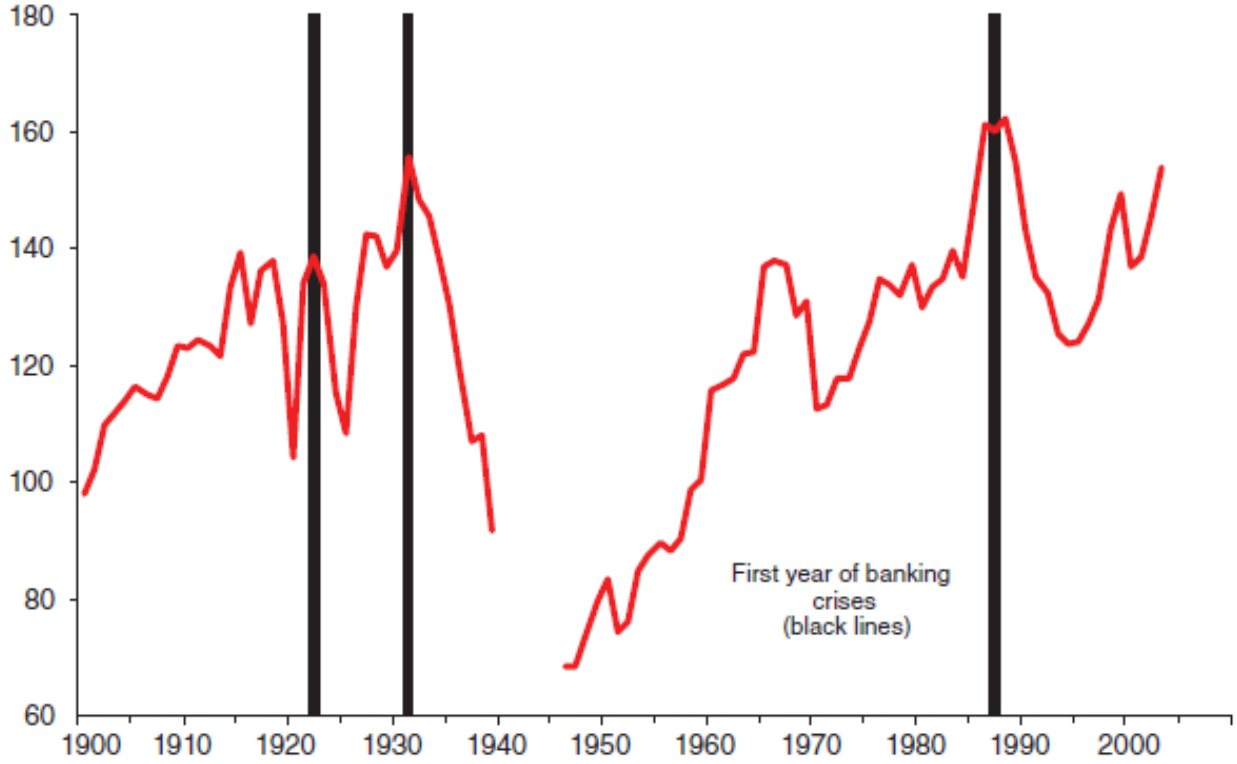


FIGURE 13. NORWAY: DOMESTIC PRIVATE CREDIT, 1900–2004
(*amount outstanding at year end as a percent of GDP*)

✓ Big Pictures and Country Histories

- Sovereign debt crisis

1 The incidence of banking crises is about the same for Advance economies and emerging market

2 There are positive correlation between External debt/GDP and percentage of the countries that have public default and banking crises

3 domestic debt surges prior to the banking crisis

✓ Big Pictures and Country Histories

▪ Banking and Debt crises

Banking Crises most often either precede or coincide with sovereign debt crises

Banking crises → currency crashes → undermine the solvency of both private and sovereign borrowers

Government force healthy bank to buy government debt → government default (sovereign default) → effect bank balance sheet

✓ Debt, Banking Crises Evidence (regression)

- Banking and Debt Crises
- Public and External debt, Default and banking crises

✓ **Debt, Banking Crises Evidence (regression)**

▪ Banking and Debt Crises

$$(1) \qquad DC_t = \beta_k + \beta_{11} DC_{t-1\ to\ t-3} + \beta_{12} BC_{t-1\ to\ t-3} + \beta_{13} FC_t + u_{1t}$$

$$(2) \qquad BC_t = \beta_k + \beta_{21} DC_{t-1\ to\ t-3} + \beta_{22} BC_{t-1\ to\ t-3} + \beta_{23} FC_t + u_{2t},$$

where BC_t and DC_t are dummy variables that take on a value of one in the *first year* of a domestic banking crisis and the first year of a sovereign debt crisis, respectively. $BC_{t-1\ to\ t-3}$ and $DC_{t-1\ to\ t-3}$ are three-year moving averages of the two crisis variables, β_k, $k = AE, EM$, which are the intercept terms for advanced economies (AE) and emerging markets (EM). The financial center crisis is given by FC_t, and u_{1t} and u_{2t} are the error terms.

✓ **Debt, Banking Crises Evidence (regression)**

▪ Banking and Debt Crises

Dependent variable:	First year of a banking crisis sample period		
Explanatory variables:	1824–2009	1900–2009	1946–2009
Banking crisis ($t-1$ to $t-3$)	0.251	–0.092	–0.383
p-value	0.237	0.892	0.276
Default ($t-1$ to $t-3$)	–0.753	–0.327	–0.315
p-value	0.708	0.441	0.417
Financial center crisis (t to $t-2$)	***3.320***	***4.238***	***3.749***
p-value	***0.000***	***0.000***	***0.000***
Advanced economy intercept	–3.834	–3.616	–4.030
p-value	0.000	0.000	0.000
Emerging market intercept	–4.245	–3.935	–3.720
p-value	0.000	0.000	0.000
Observations	13,206	7,810	4,473
Number of positive observations	281	212	128
R^2	0.060	0.080	0.052

✓ **Debt, Banking Crises Evidence (regression)**

▪ Banking and Debt Crises

Dependent variable:	First year of a default sample period		
Explanatory variables:	1824–2009	1900–2009	1946–2009
First year of a banking crisis ($t-1$ to $t-3$)	***2.663***	***2.510***	***2.754***
p-value	***0.000***	***0.000***	***0.001***
Default ($t-1$ to $t-3$)	0.542	0.560	1.097
p-value	0.064	0.000	0.000
Financial center banking crisis (t to $t-2$)	0.967	0.767	–1.470
p-value	0.102	0.176	0.176
Advanced economy intercept	–5.480	–6.441	—
p-value	0.000	0.000	—
Emerging market intercept	–4.241	–4.047	–4.022
p-value	0.000	0.000	0.000
Observations	13,206	7,810	4,473
Number of positive observations	203	140	92
R^2	0.043	0.070	0.051

✓ Debt, Banking Crises Evidence (regression)

- Public and External debt, Default and banking crises

Banking ↑ External debt

Debt Crises ↑ Public debt

✓ Debt, Banking Crises Evidence (regression)

▪ Public and External debt, Default and banking crises

Dependent variable:	First year of a banking crisis sample period		
Explanatory variables:	1824–2009	1900–2009	1946–2009
Banking crisis ($t-1$ to $t-3$)	–1.882	–1.837	–1.994
p-value	0.016	0.034	0.083
Default ($t-1$ to $t-3$)	–1.600	–1.866	–1.210
p-value	0.145	0.111	0.336
Financial center crisis (t to $t-2$)	***4.431***	***4.238***	***3.510***
p-value	***0.000***	***0.000***	***0.000***
Δ Public debt/GDP (t to $t-2$)	0.003	0.003	0.003
p-value	0.127	0.069	0.050
Advanced economy intercept	–3.554	–3.541	–4.030
p-value	0.000	0.000	0.000
Emerging market intercept	–3.586	–3.530	–3.720
p-value	0.000	0.000	0.000
Observations	5,986	4,931	3,343
Number of positive observations	221	181	116
R^2	0.060	0.080	0.052

✓ **Debt, Banking Crises Evidence (regression)**

▪ Public and External debt, Default and banking crises

Dependent variable:	First year of a default sample period		
Explanatory variables	1824– 2009	1900–2009	1946–2009
Banking crisis ($t-1$ to $t-3$)	***1.909***	***1.978***	***2.680***
p-value	***0.012***	***0.001***	***0.003***
Default ($t-1$ to $t-3$)	1.406	0.560	1.097
p-value	0.113	0.000	0.000
Financial center crisis (t to $t-2$)	0.902	0.767	–1.218
p-value	0.102	0.176	0.075
Δ Public debt/GDP (t to $t-2$)	***0.004***	***0.003***	0.003
p-value	***0.025***	***0.028***	0.090
Advanced economy intercept	–6.576	–7.261	—
p-value	0.000	0.000	—
Emerging market intercept	–3.823	–3.781	–4.022
p-value	0.000	0.000	0.000
Observations	5,986	4,931	3,343
Number of positive observations	104	95	72
R^2	0.042	0.070	0.051

✓ **Debt, Banking Crises Evidence (regression)**

▪ Public and External debt, Default and banking crises

Explanatory variables:	1974–2009 Dependent variable: first year of a banking crisis	1974–2009 Dependent variable: first year of a default
Banking crisis ($t-1$ to $t-3$)	0.218	0.004
p-value	0.000	0.391
Default ($t-1$ to $t-3$)	–0.042	0.018
p-value	0.115	–0.051
Financial center crisis (t to $t-2$)	***0.781***	***–0.051***
p-value	***0.016***	***0.004***
External debt/GDP ($t-1$)	***0.001***	0.001
p-value	***0.000***	0.152
Intercept	***0.060***	0.043
p-value	***0.000***	0.000
Observations	1,496	1,496
Number of positive observations	85	55
R^2	0.295	0.012

- Bank crises often precede or accompany sovereign debt crises
- External debt surges are an antecedent to banking crises
- Public borrowing surges ahead of external sovereign default, as government have "hidden debt" that exceed the better document levels of external debt

✓ Theoretical underpinnings of the “This-Time-Is-Different” Syndrome

✓ Theoretical underpinnings of the

- "This-Time-Is-Different" Syndrome

1

Multiple Equilibria Rationales :

During the boom, politician and investors could misinterpret a "high trade" outcome among a set of potential equilibria as evidence of permanently changed circumstances. They wouldn't recognize that the economy has its back to a proverbial cliff, until it is too late

✓ Theoretical underpinnings of the

- "This-Time-Is-Different" Syndrome

2

Short-Term biases that Allow crisis to build up:

Contemporaneous competition by different interest group can lead to tragedy-of-the-commons situation in which short-term expenditures are favored at the expense of longer term fiscal sustainability

✓ Theoretical underpinnings of the

- "This-Time-Is-Different" Syndrome

3

Hidden Debt:

Government debt burdens often come pouring out of the woodwork which public seemed blissfully unaware

Ex. The way government routinely guarantee the debt of quasi-government agencies that may took on a great deal of risk. Also, the change from private debt to public debt

✓ Theoretical underpinnings of the

- "This-Time-Is-Different" Syndrome

4

Further Models of leverage and Behavior:

Overconfidence, the arrogance is of those who believe they have figured out how to do things better and smarter so that the boom can long continue without a crisis

Question

Q & A

Answer