

Causes of Financial Crises and Lessons for Macroeconomic Policy and Regulation

Keynote Speech 4th Tinbergen Institute Conference

*Crashes and systemic crises in financial markets:
Implications for banks, investors and
macroeconomic policy-makers*

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By Stijn Claessens

Assistant Director, Research Department, IMF

Causes of Financial Crises and Lessons for Macroeconomic Policy and Regulation

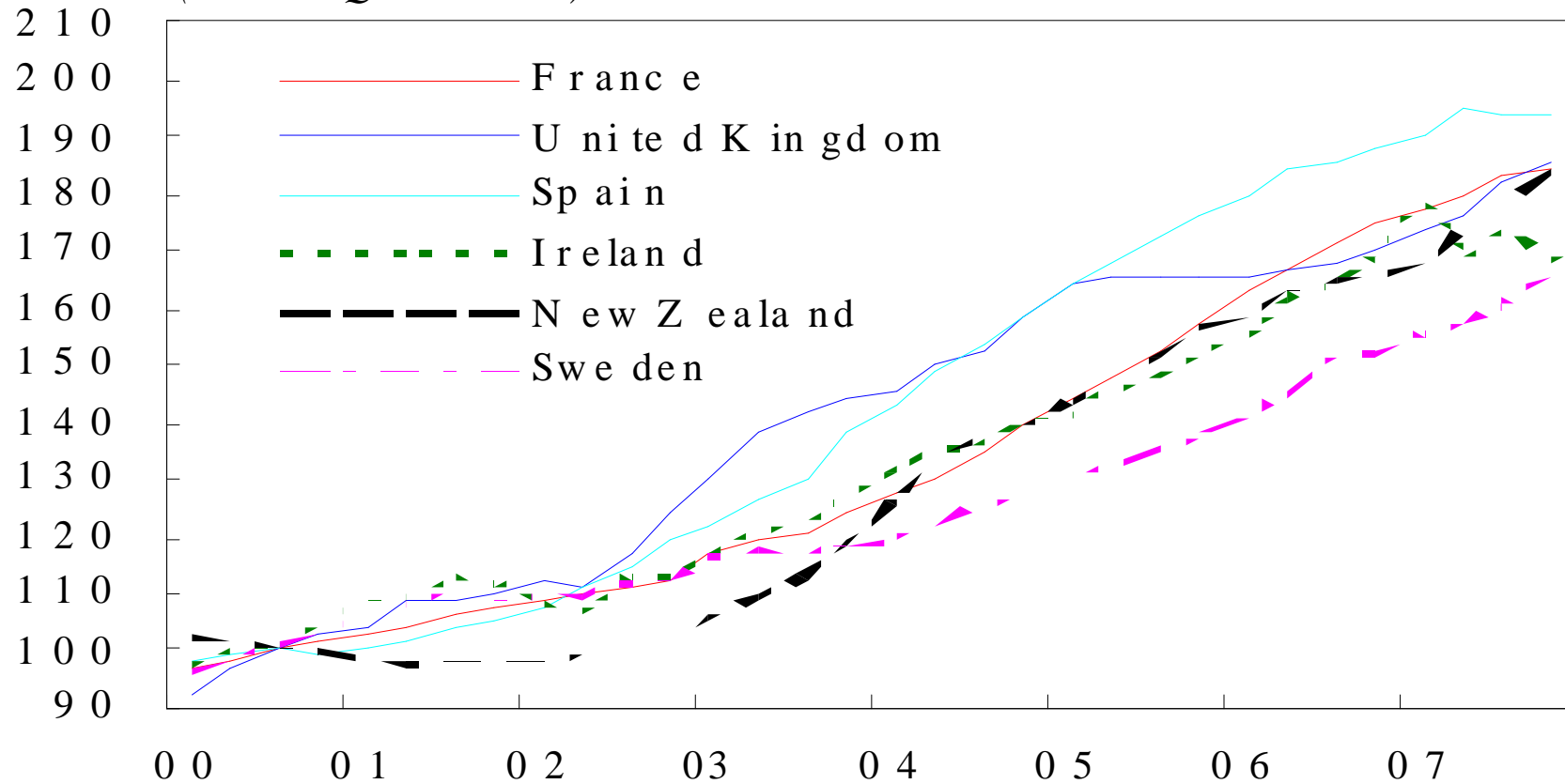
1. “Causes” of the current crisis
 - Many Commonalities with Previous Crises
 - Some New Dimensions
 2. While we conference, crisis is ongoing ..
 - How Bad, How Long, How Global?
 - Phases in Systemic Crises
 - Possible Policy Responses
 3. Lessons for the medium term
 - Macroeconomic Policies
 - Regulation and Supervision
 - International Financial Architecture
-

“Causes” of the Current Crisis: Many Commonalities with Previous Crises

- Asset price bubbles: housing, equity, .com
 - Ex-post clear, ex-ante always less
 - Credit booms
 - With deteriorating lending standards
 - Now too, but this time more households
 - Systemic risk buildup
 - Subprime and loans in FX, became correlated
 - Regulation and supervision failures
 - Do not keep up, this time especially derivatives
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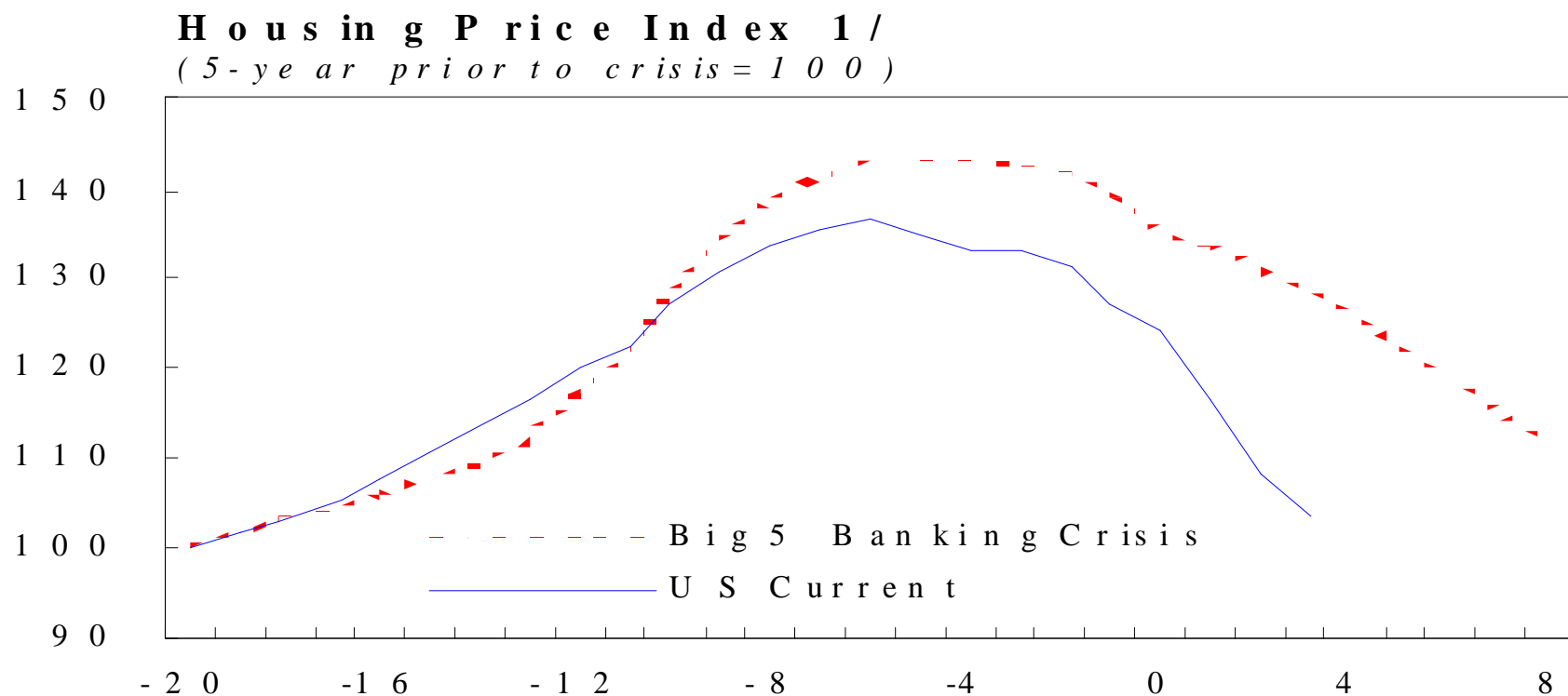
Asset price bubble this time: sharply rising housing prices

Real House Prices
(2000 Q1 = 100)



Source: BIS and OECD.

Preceding the crash typical of banking crises...

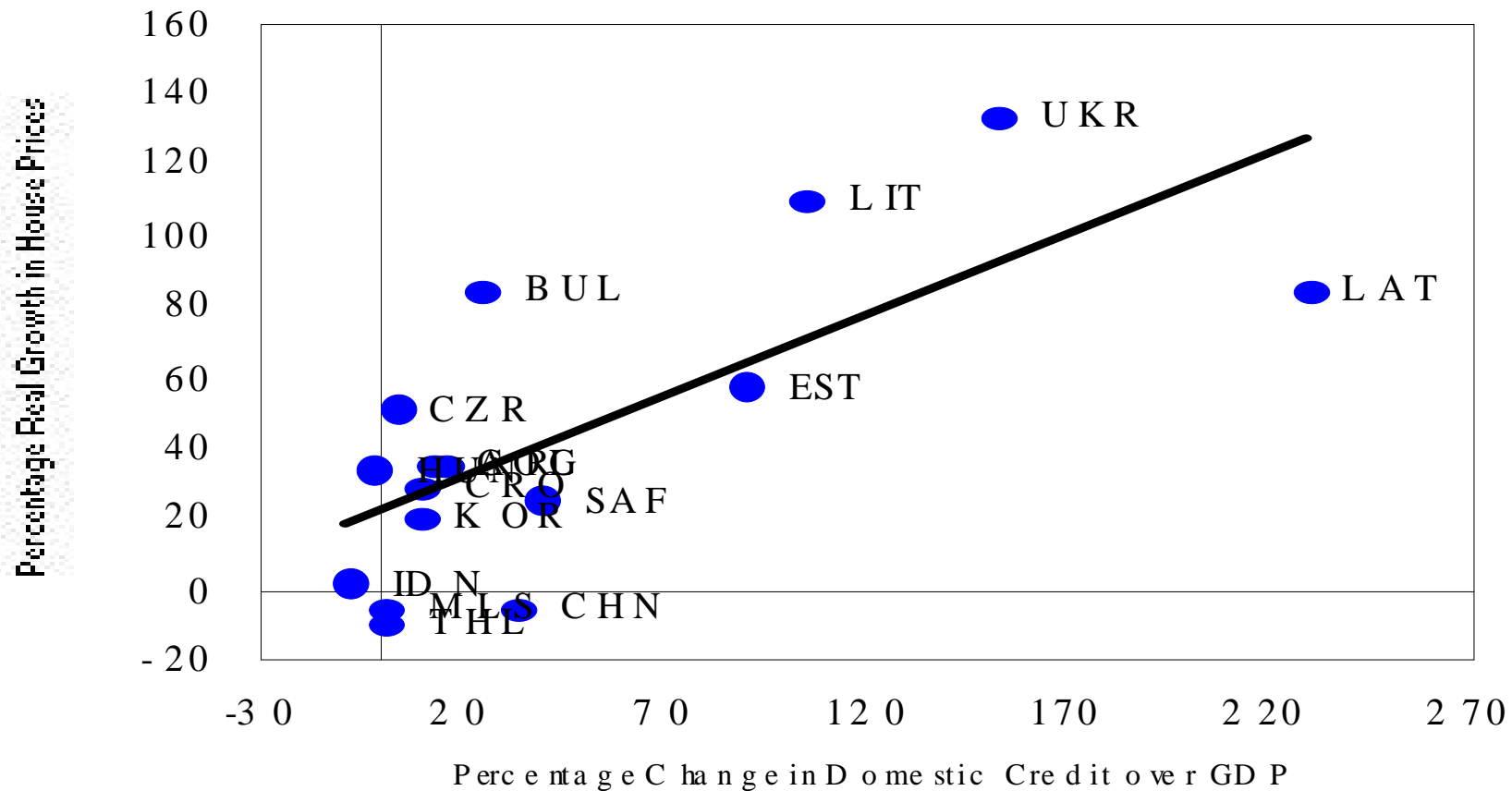


Sources: BIS and Haver Analytics.

1/ House price index is equal to 100 five year prior to banking crises. Big Five refers to the average of indices for the 5 major banking crises. For the current crisis in the United States, the beginning date is assumed to be 2007:3.

Credit and leverage growth fuelled housing prices increases

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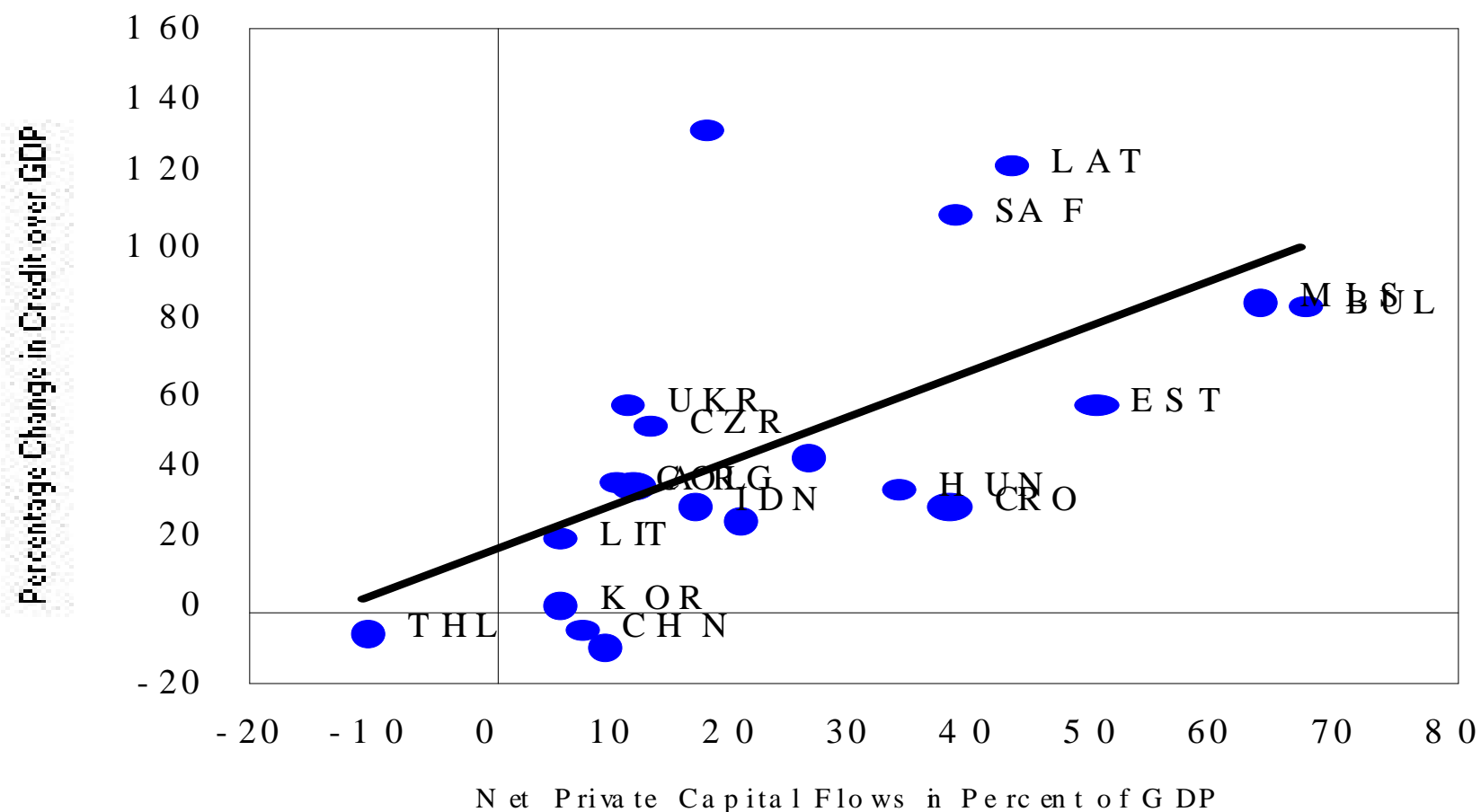


As before, in US this was a large and long-lasting credit boom



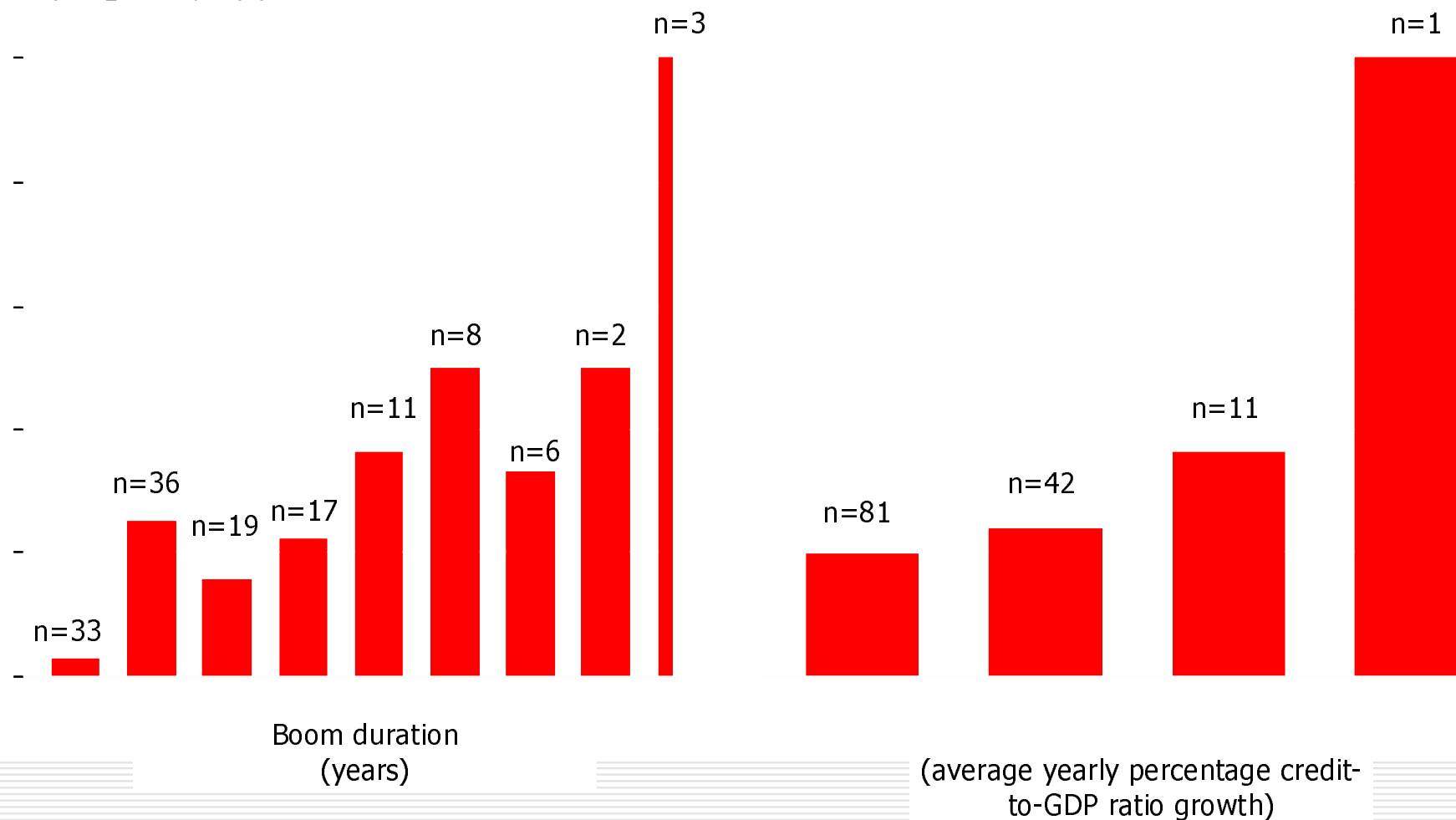
International financial integration fuelled emerging markets' booms

Capital Inflows and Credit Growth
(2004-2007)



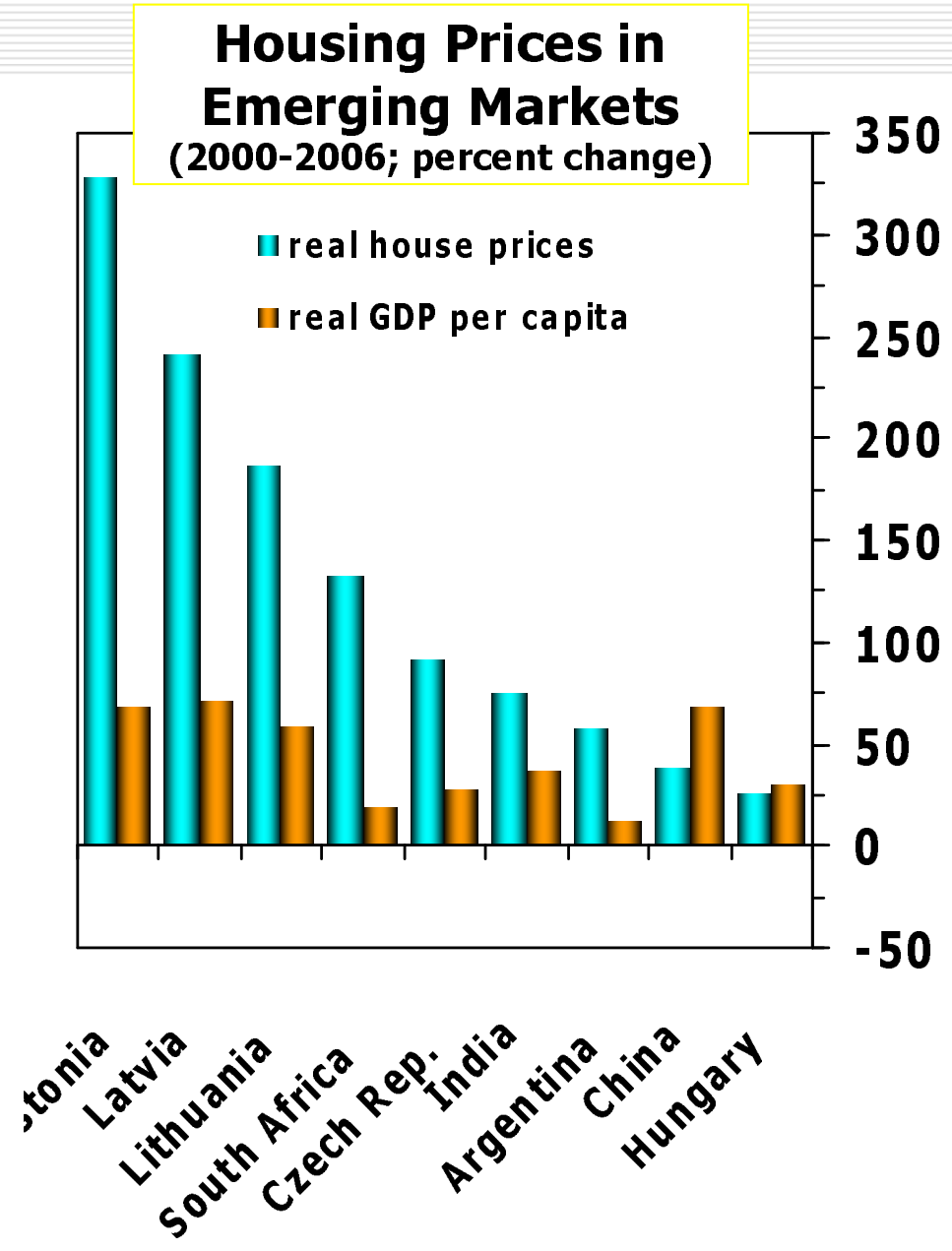
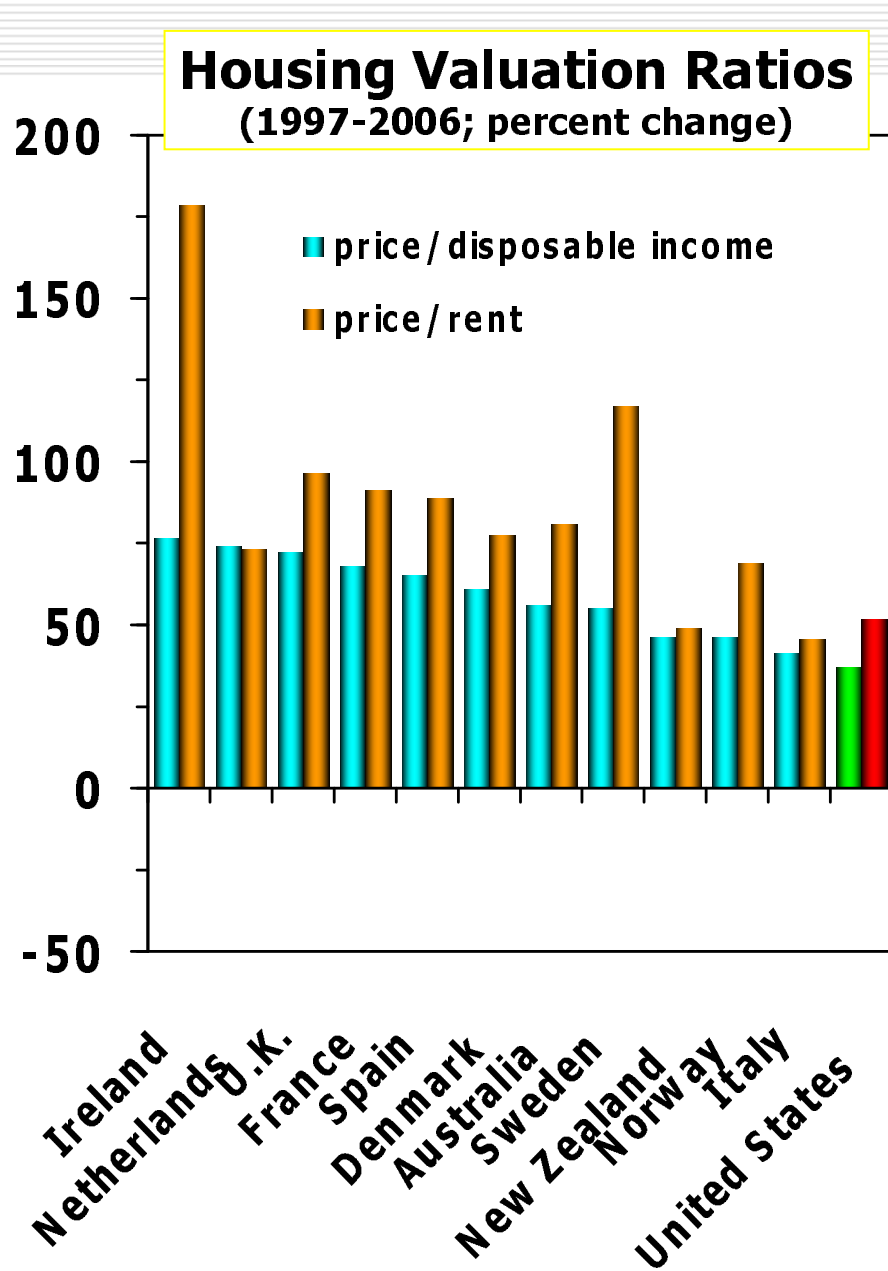
But large and long-lasting credit boom often end up badly ^{1/}

(frequency of financial distress)



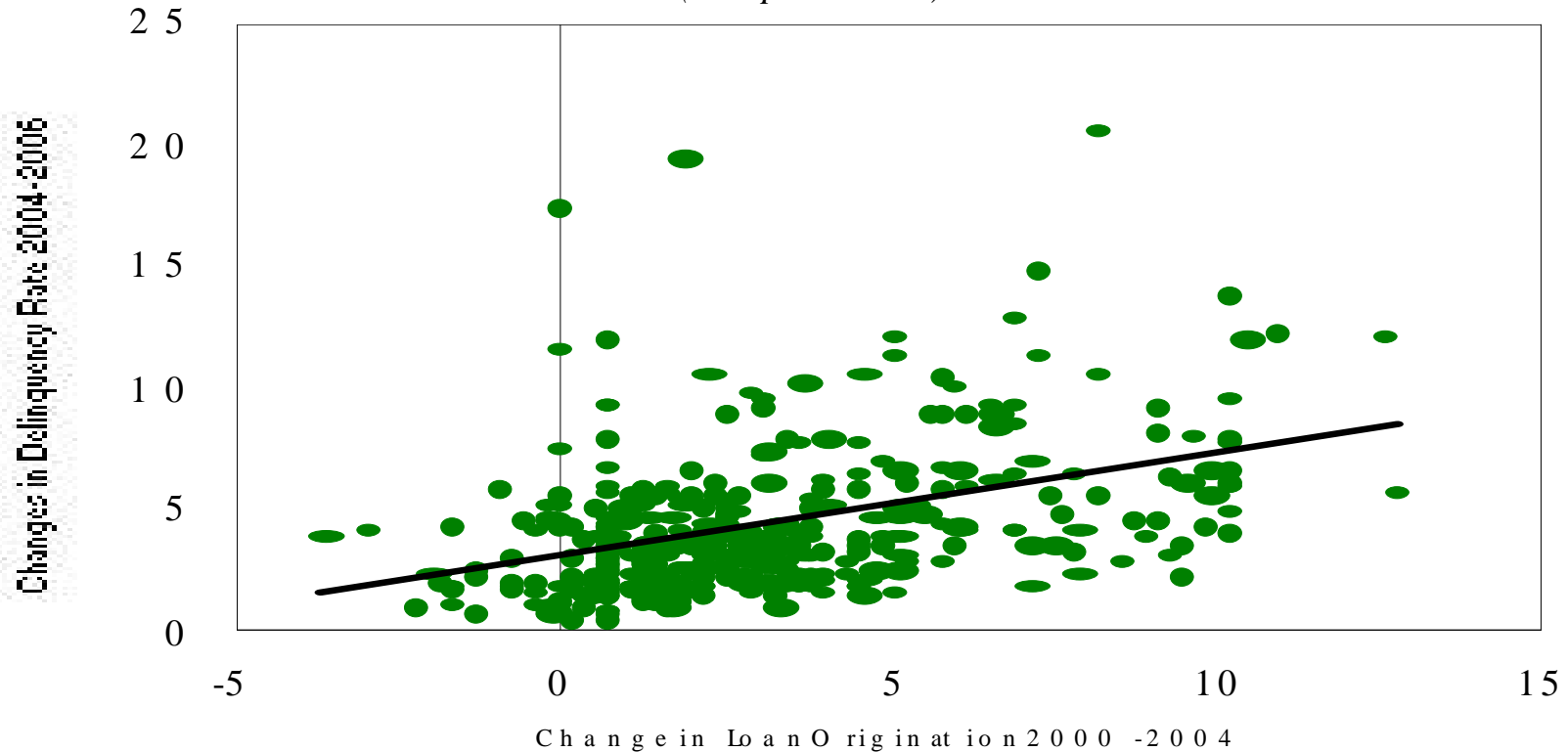
**1/ Barajas, Dell’Ariccia, and Levchenko (2007);
financial episodes = 135, based on Caprio & Klingebiel (2003).**

Indeed, housing booms in many current crisis countries



In booms, lending standards often deteriorate, as in US regions

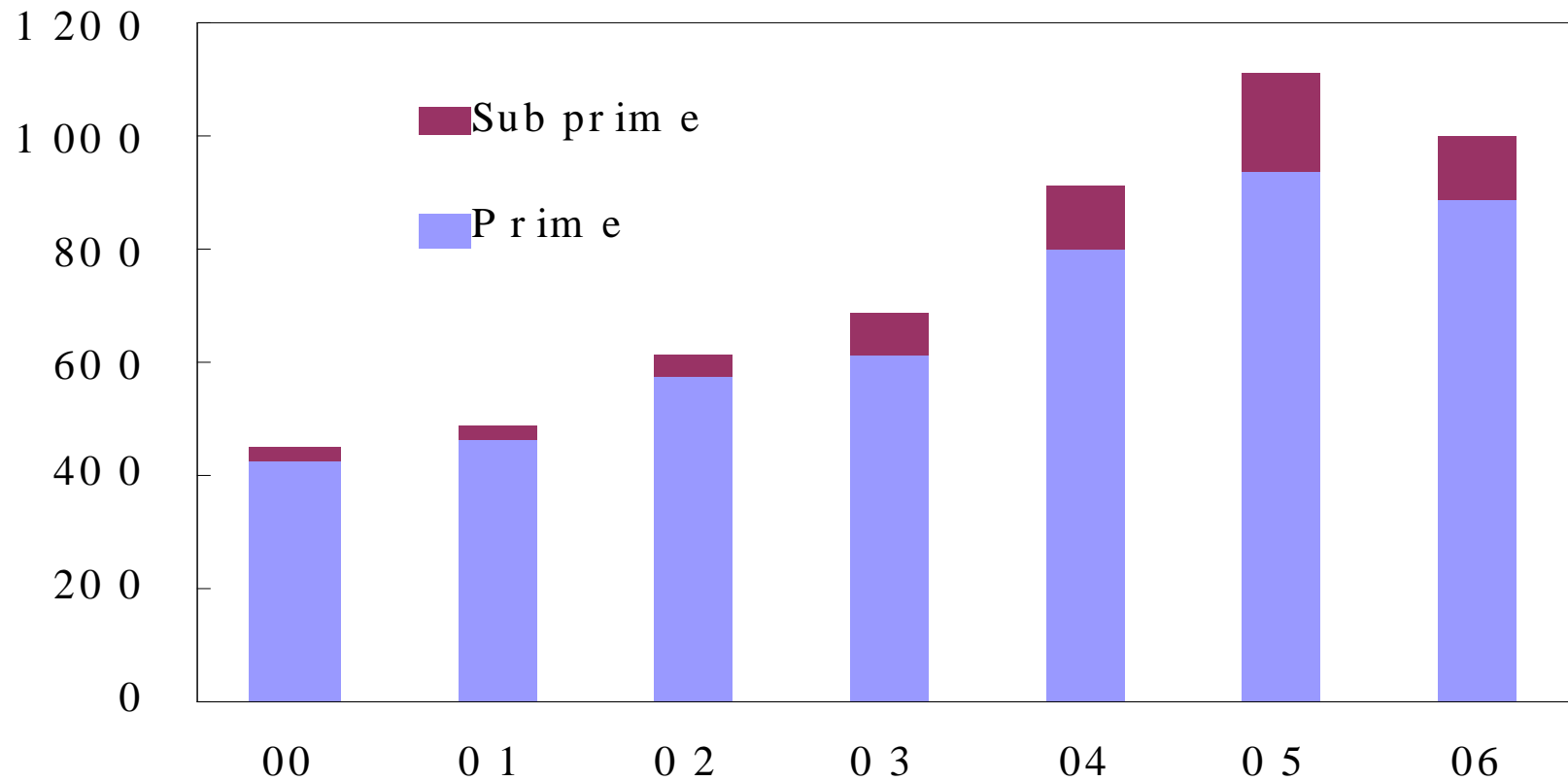
Delinquency and Credit Growth by Metropolitan Statistical Area (In percent)



Sources: HMDA, Inside Mortgage Finance, and IMF staff calculations.

Subprime the latest manifestation of decline in lending standards

Nationwide Home Purchase Loan Originations
(Volume of loans in billions of US \$)



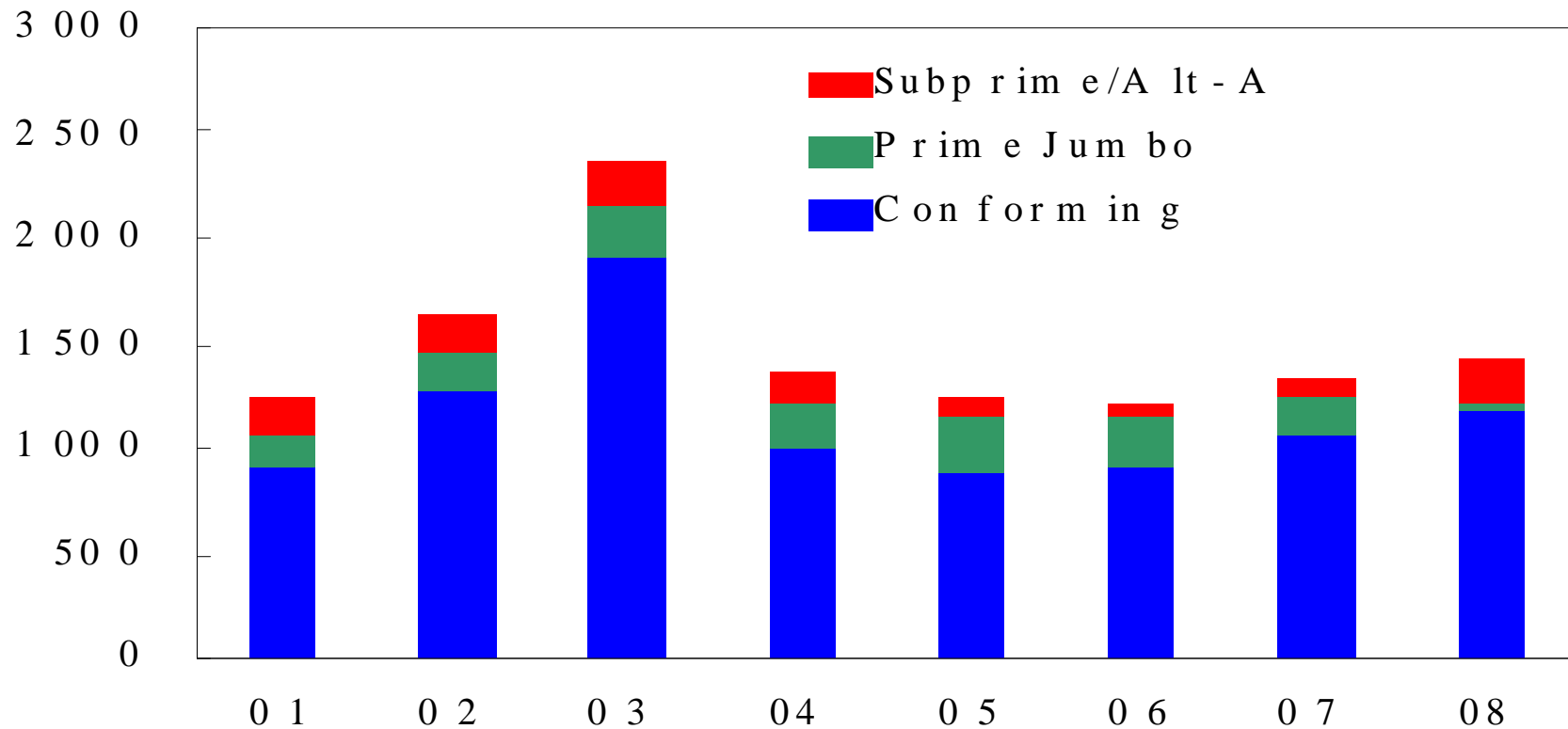
“Causes” of the Current Crisis: Some New Dimensions

- Increased opaqueness
 - Securitization: poorer risk assign, monitoring
 - Harder to value once crisis started
 - Financial integration & interconnectedness
 - Larger capital flows /cross-border positions
 - Greater connection between markets
 - Increased role of leverage
 - In many sectors and markets
 - Central role of households
 - Complicating restructuring
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Securitization was a somewhat new dimension, opaque to many

M o r t g a g e S e c u r i t i z a t i o n

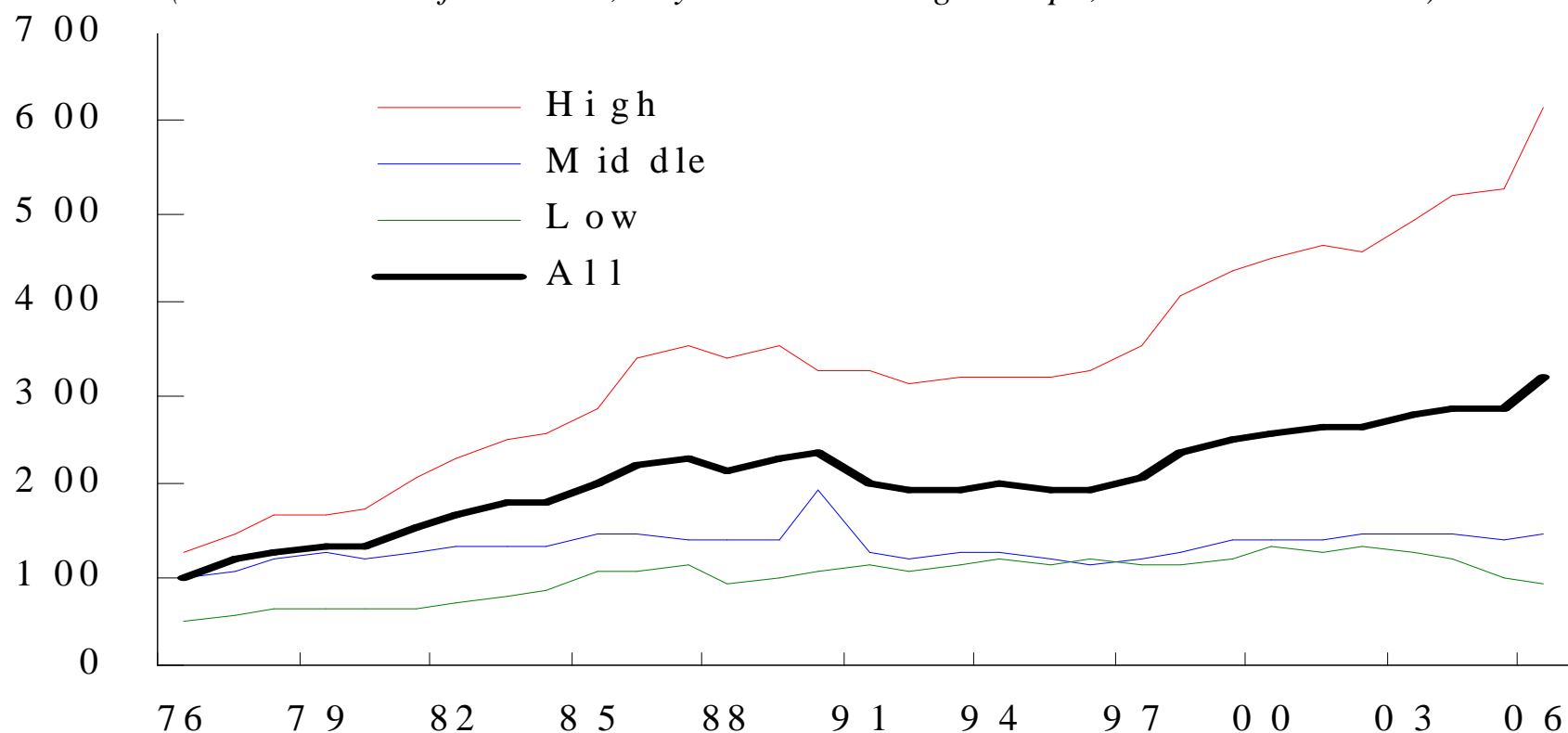
(In US \$ billions, 2008 annualized number)



Source: IMF staff estimates.

International financial integration increased sharply in last few years

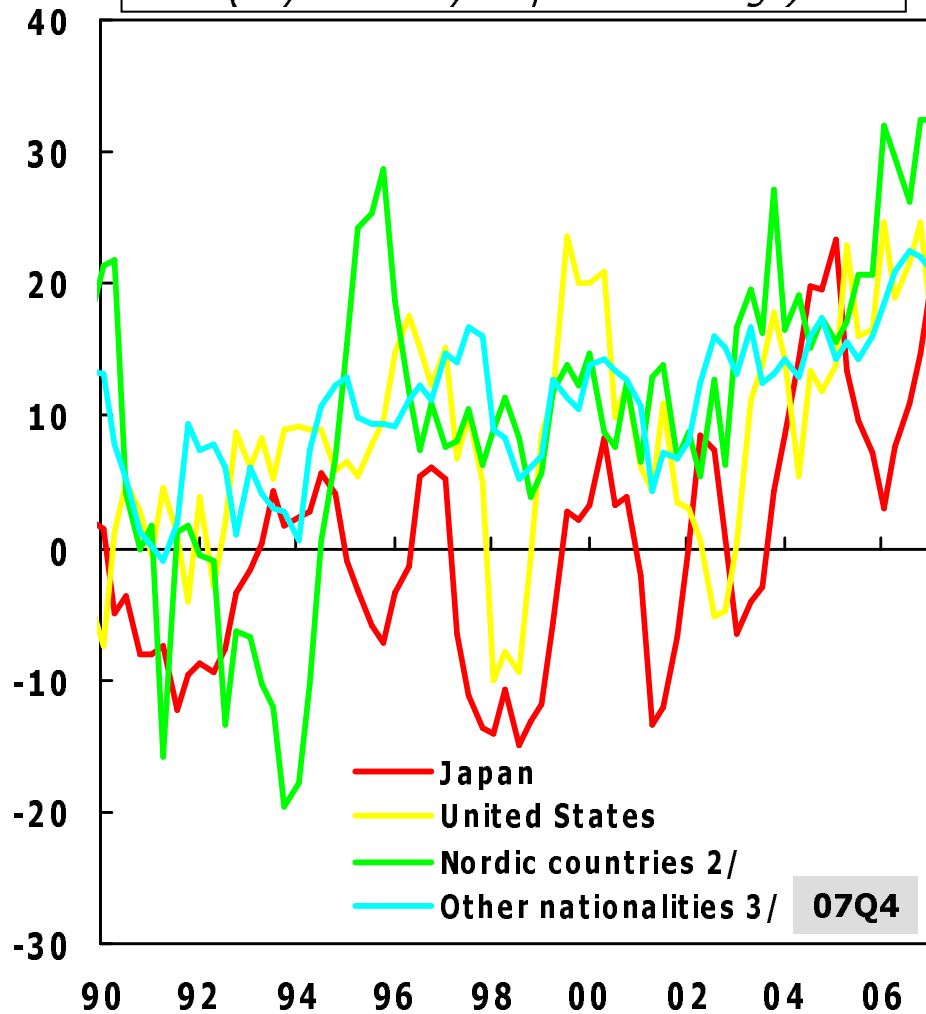
Gross External Assets and Liabilities
(Percentage of GDP ; by income group ; 1976-2006)



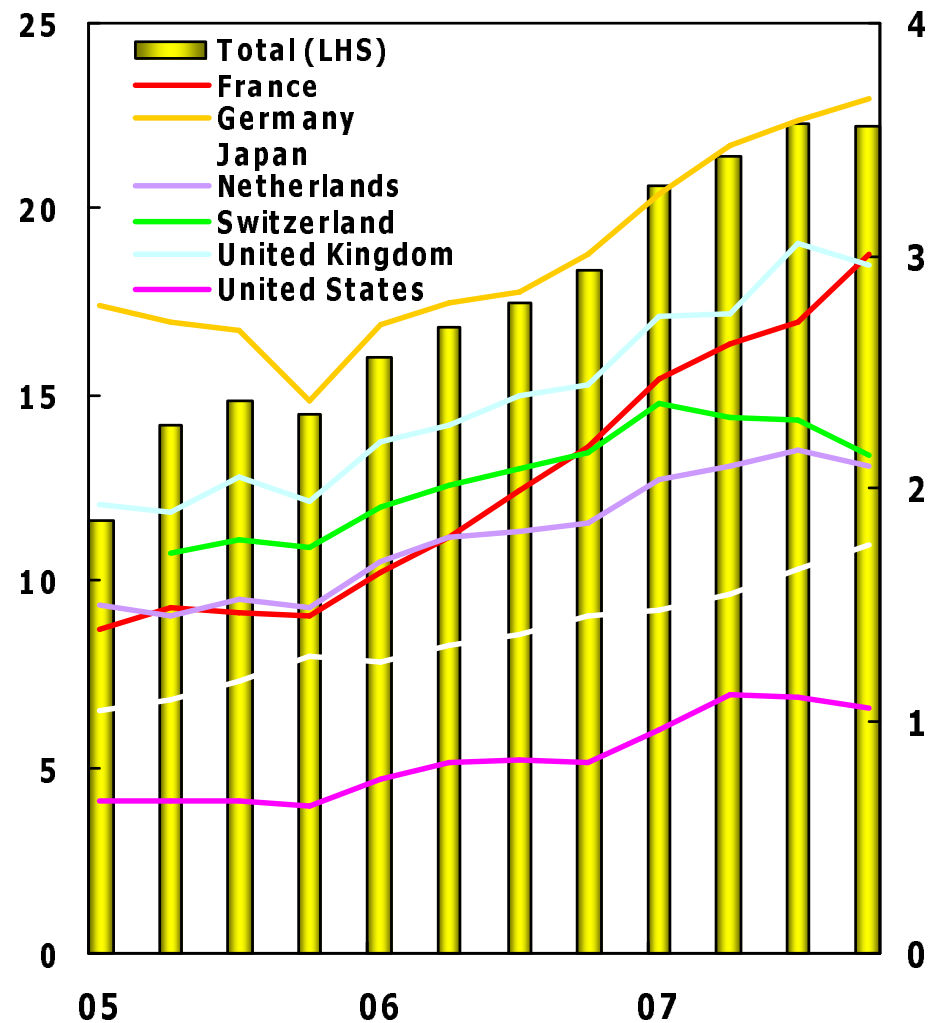
Source: Lane and Milesi-Ferretti (2006).

International lending and interbank exposures grew

**Growth in International Claims,
by Bank Nationality 1/
(in year over year percent change)**



**Foreign Exposures 4/ 5/
(in trillions of U.S. dollars)**



1/ Foreign currency claims on home country residents are excluded.

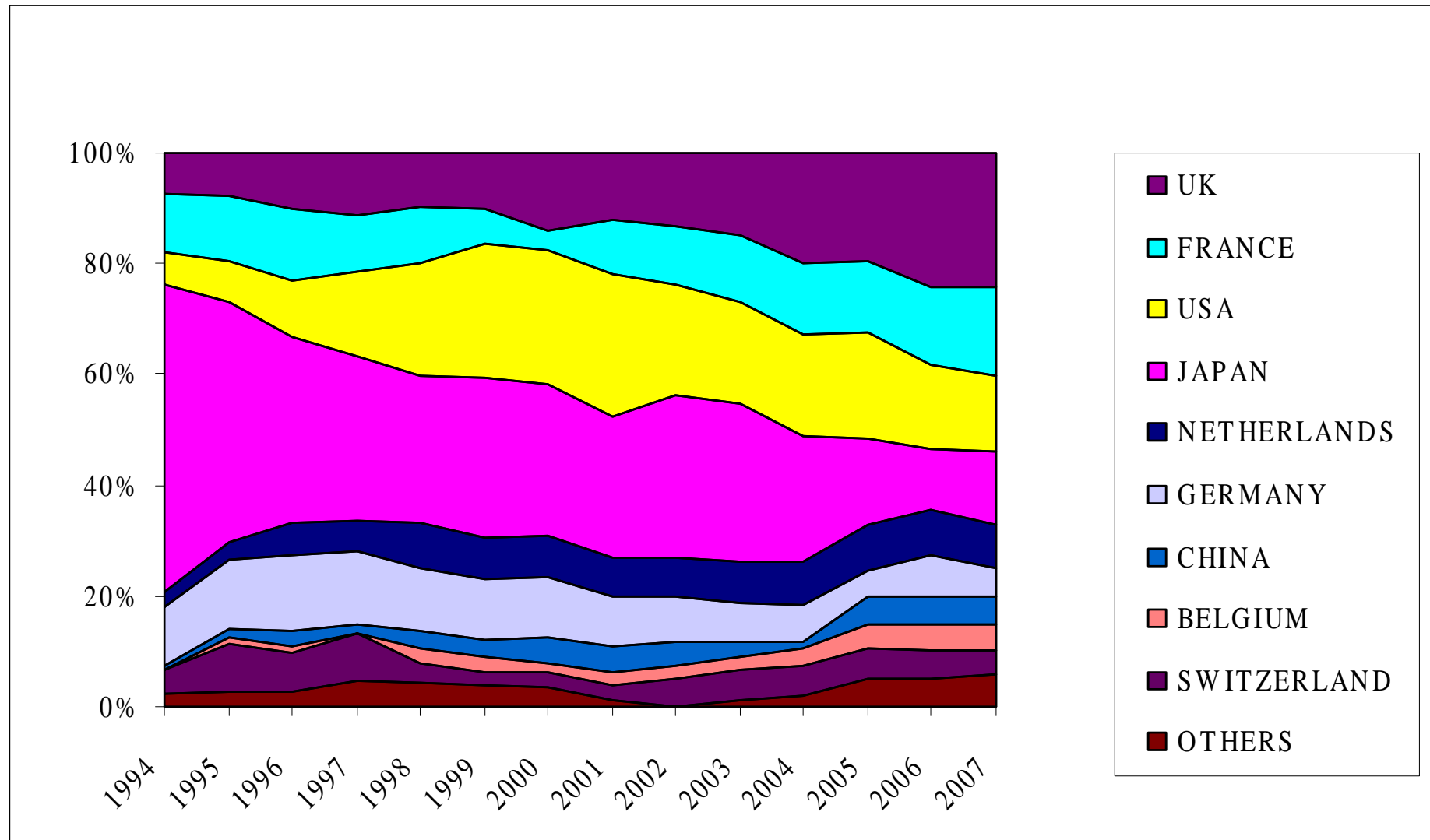
2/ Danish, Finnish, Norwegian and Swedish banks.

3/ Total international claims excluding those booked by Japanese, Nordic and US banks.

4/ On an ultimate risk basis and excluding inter-office transfers.

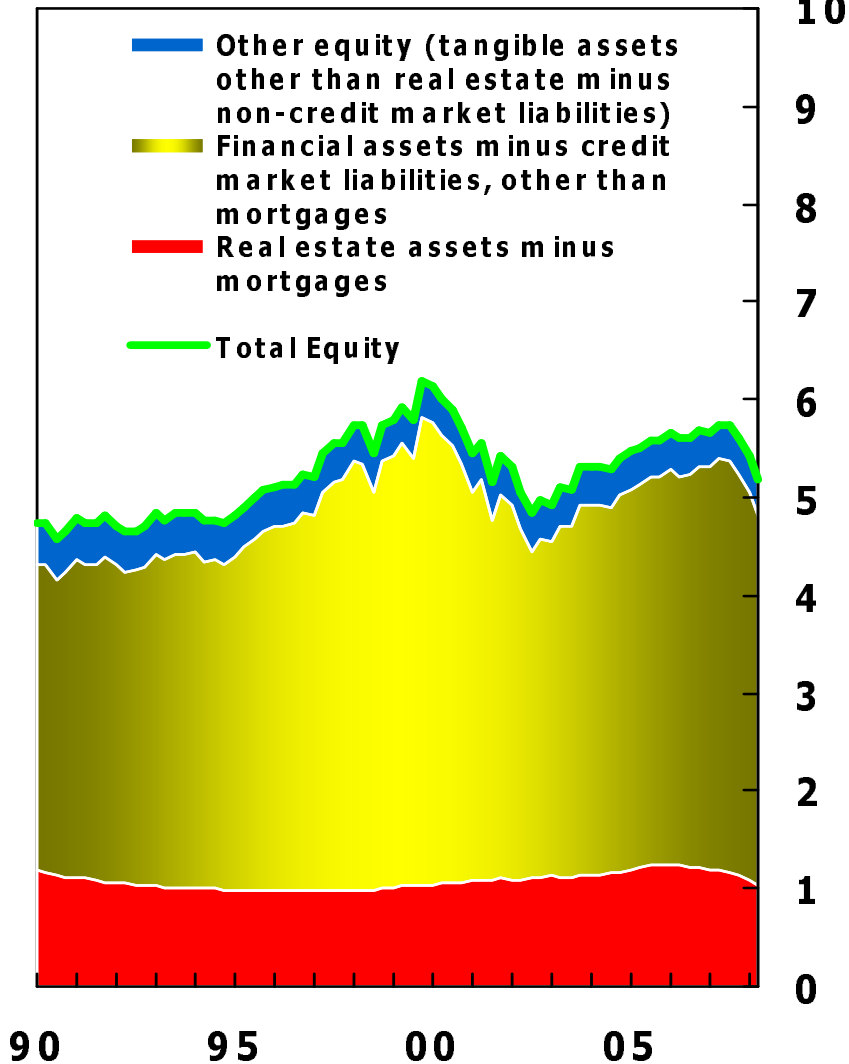
5/ Foreign claims vis-à-vis entities (banks and non-banks) in advanced economies, booked by banks headquartered in the countries shown.

Dispersion of players increased (top 50 banks across countries)

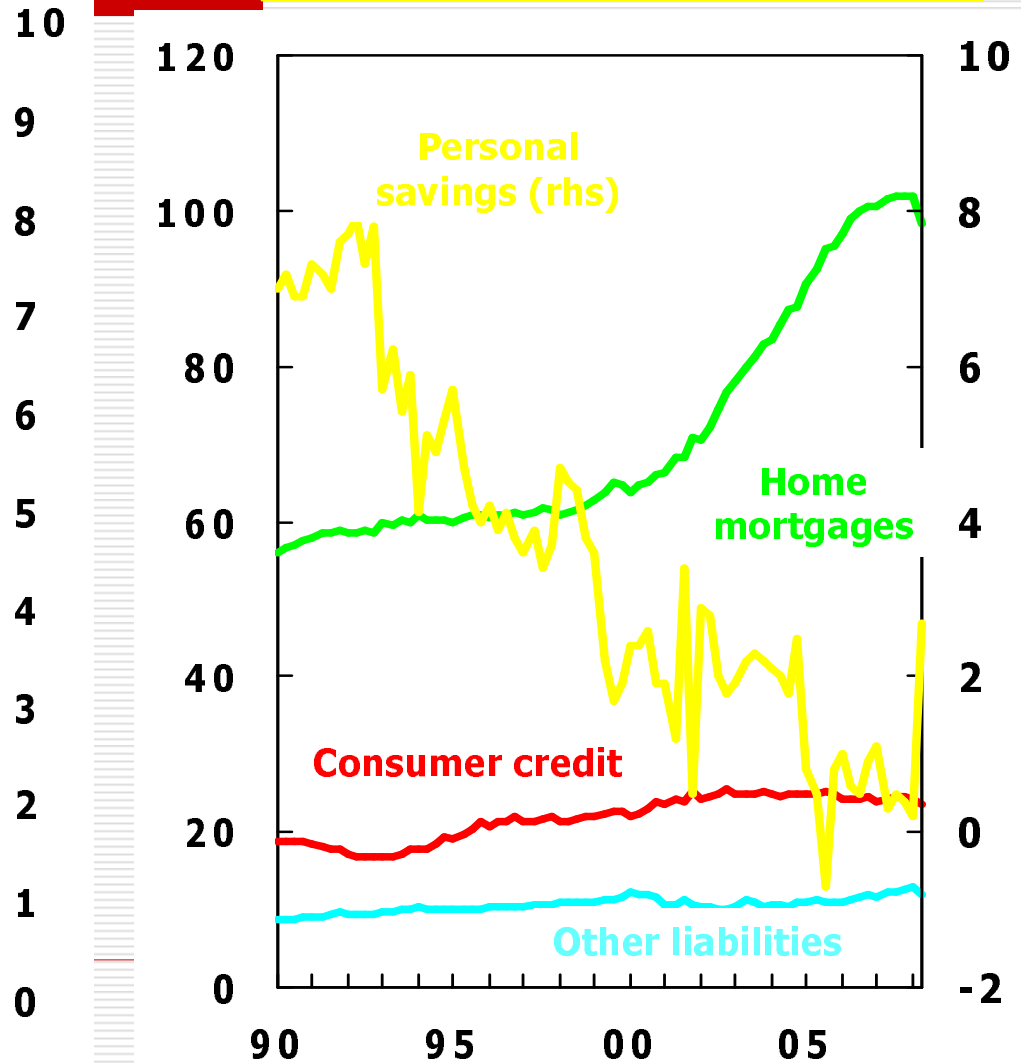


Centrality of households leverage: U.S. households leveraged up and saved less

Household Equity
(ratios to disposable income)



Household Indebtedness
(in percent of disposable income)



As world overall “benign”, only some and not obvious concerns

- Benign conditions
 - High global growth
 - High productivity
 - Low inflation
 - Only some possible sources of concern
 - Global imbalances, large capital flows into US
 - “Savings” glut, low interest rates, yield search
 - Not obvious how these factors would affect overall stability
 - Few, national/international issued warning signals
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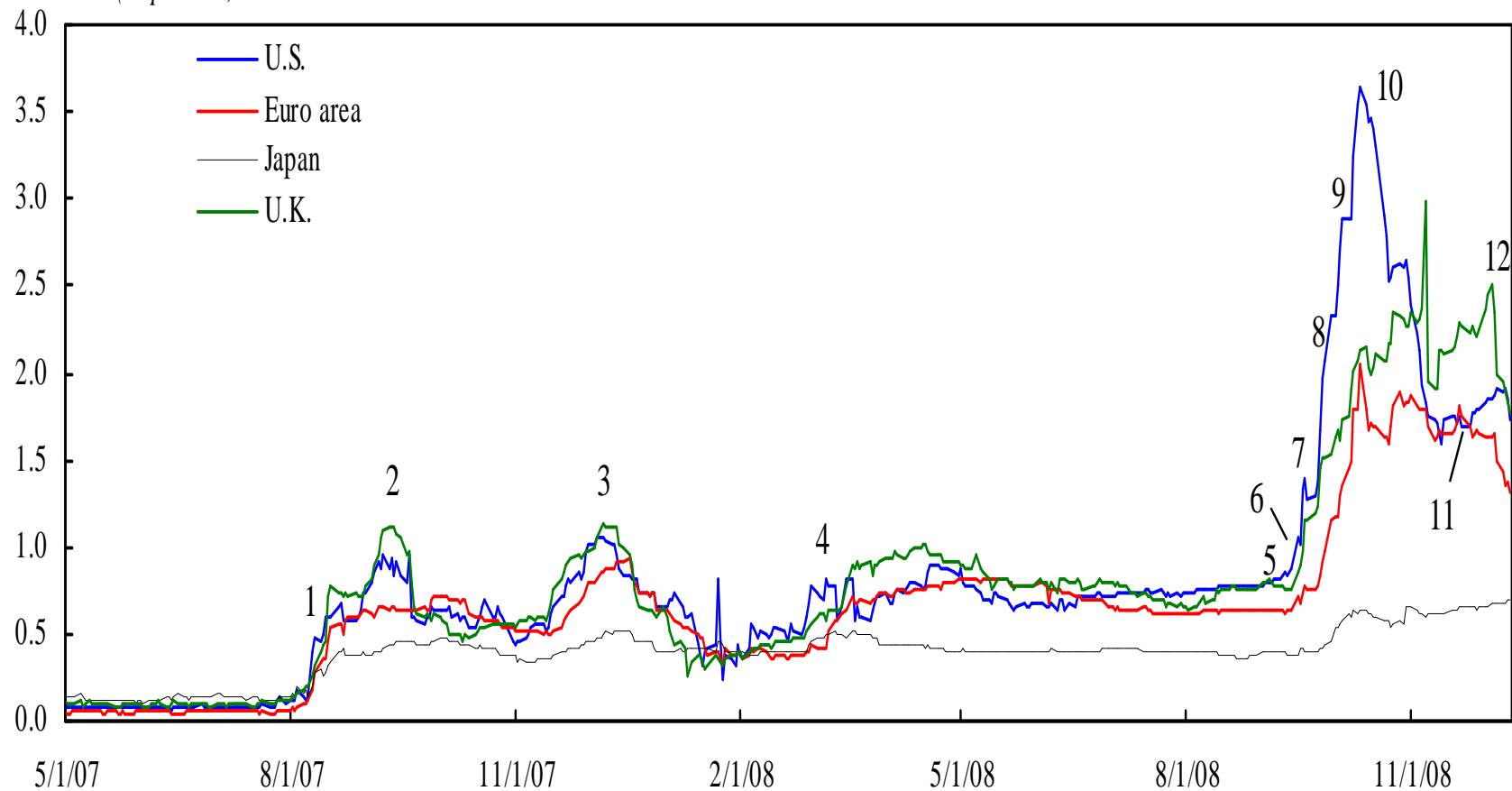
U.S. is large economy and financial center, leading easily to spillovers

- ❑ US size/interconnectedness bound to global effects/spillovers
 - ❑ U.S. = 31 percent of global financial assets
 - U.S. dollar = 62 percent of reserve currency assets
 - U.S. financial assets perceived to offer safety and liquidity attractive for private and public investors
 - United States is major financial intermediary with large gross (two-ways) cross-border capital flows
 - Large size also means large real sector shocks, as US recession affects global demand
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Crisis spread through lack of liquidity, then solvency, confidence

Interbank Market Spreads

(in percent; 3-month LIBOR minus 3-month)



Timeline of events

1. August 1-17, 2007—German bank *IKB. BNP Paribas*; ECB, other central banks inject overnight liquidity; *Sachsen LB*.
 2. September 14-19 — *Northern Rock*
 3. December 12, 2007— Fed, ECB, SNB, Bank of Canada; Fed (TAF).
 4. March 11-16, 2008— *Bear Stearns*
 5. September 7— Fannie Mae and Freddie Mac
 6. September 15-16—*Lehman Brothers* and *AIG*.
 7. September 20—\$700 billion *Troubled Asset Relief Program*
 8. September 29—Fed *currency swap lines*; *Fortis*; Iceland
 9. October 7-8—*Coordinated interest rate cuts*; CPFF Iceland; U.K. provide capital to banks and issues debt guarantees.
 10. October 13-14—Euro governments provide capital; U.S. *Capital Purchase Program* (up to \$250 billion) under TARP.
 11. November 23-25—*Citigroup's*. Fed \$200 billion new facility.
 12. December 4— *Large joint interest rate cuts* in Europe
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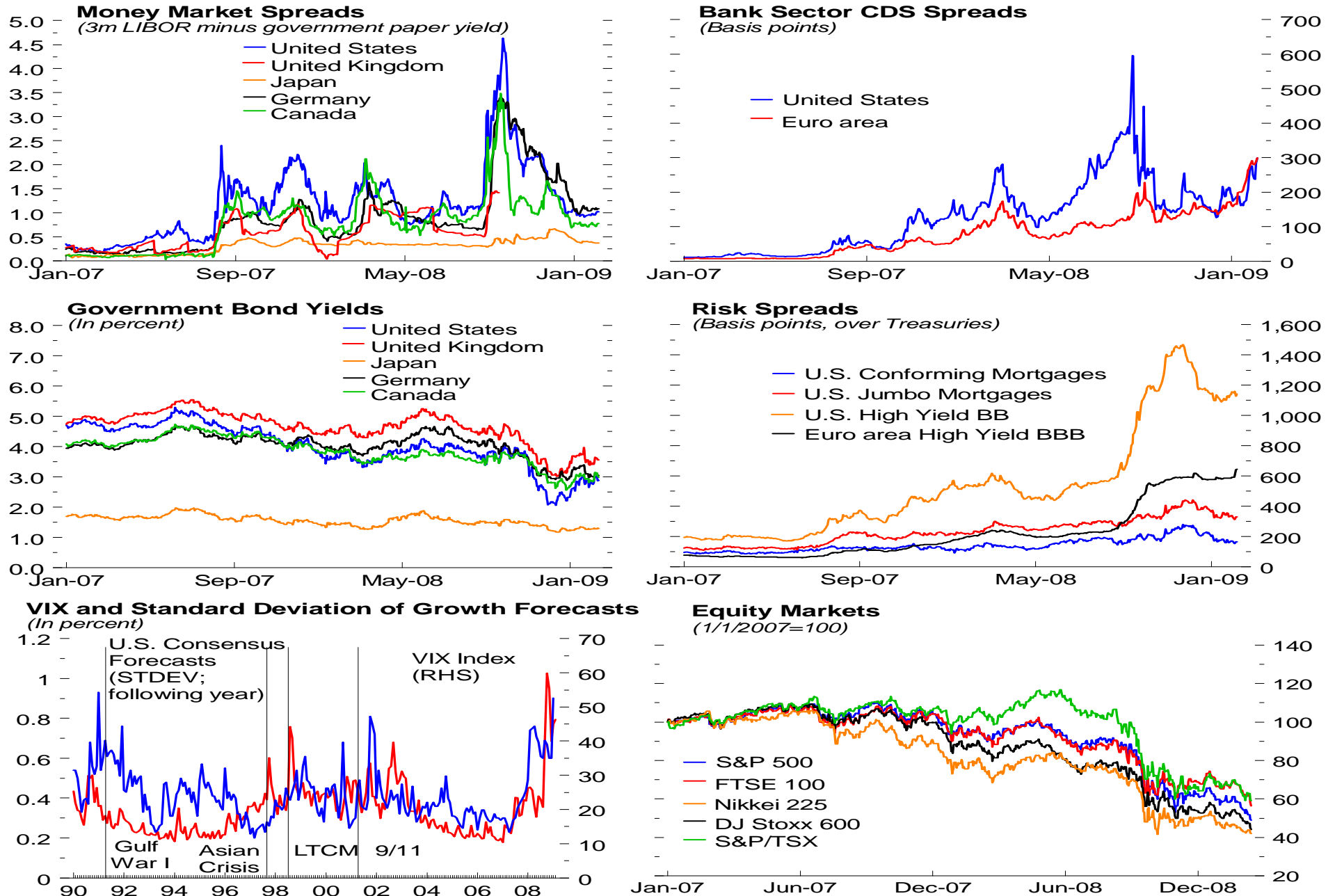
While we conference, crisis is ongoing ..

- Financial systems under severe stress
 - Very tight credit markets
 - Sharp house prices declines (US, UK, Spain, ...)
 - Substantial drops in equity prices globally
 - Economic contractions (US, EU, Japan, ...)
 - Emerging markets (e.g., Eastern Europe) under siege

 - Concerns about the length and severity of
credit market problems....
house price declines... asset price declines....
recessions... depression...
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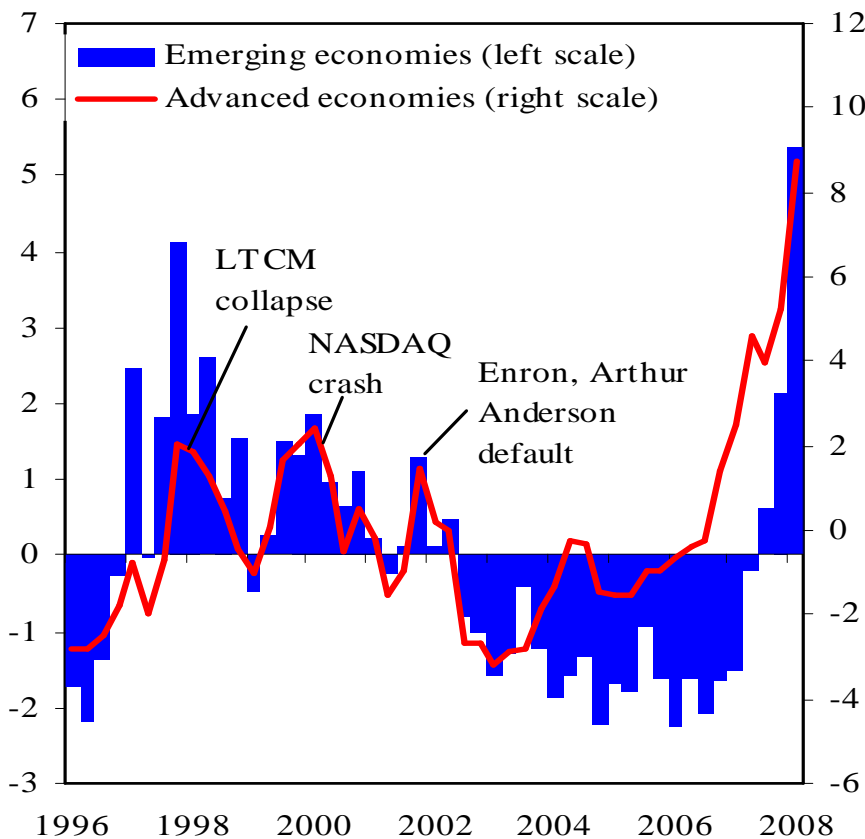
Figure 2. Financial Markets Remain Under Heavy Stress

Interbank lending came under severe stress as concerns about the banks' creditworthiness flared up. Government bond yields were driven down by policy rate cuts and flight to safety, while spreads on risky assets shot up. Recent government intervention has reduced stress somewhat, but things are far from normal.

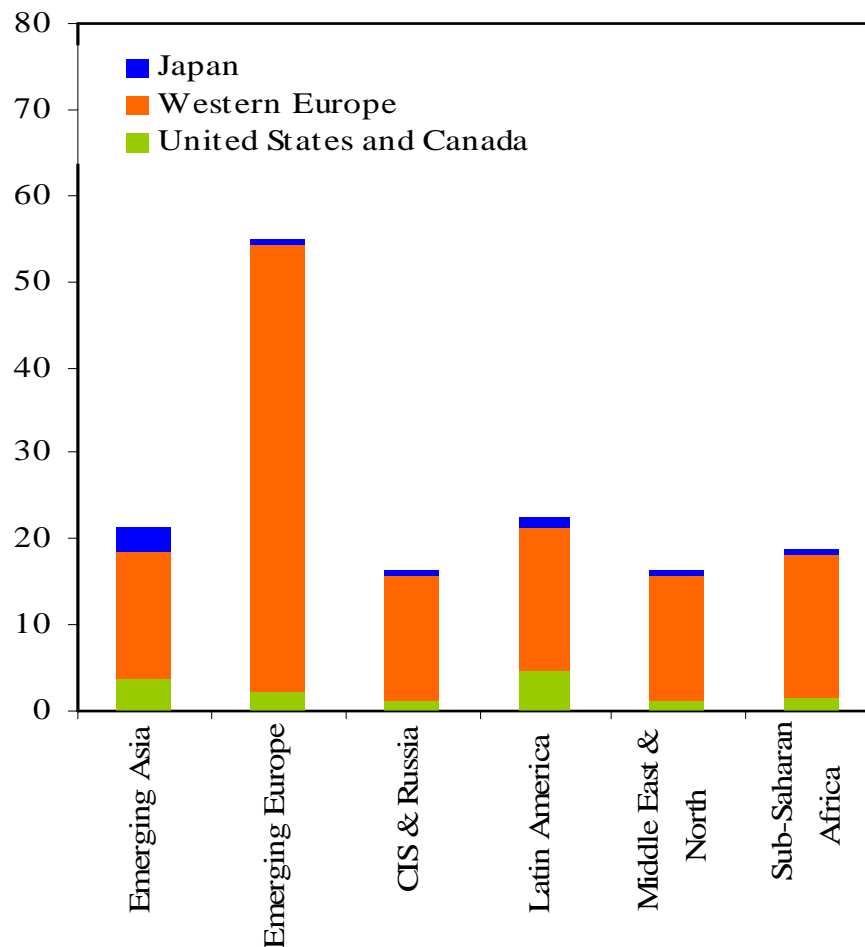


Financial stress high and emerging markets at risk of “sudden stops”

Comparison of Financial Stress Levels
(Level of index, GDP weighted sum)



Liabilities to Advanced Economies' Banks 2007 (Percent of destination GDP)



Questions facing policy makers today (and researchers can help!)

- How bad, how long will it be?
 - What does theory suggest, empirics tell?
 - What to do in systemic financial crises?
 - What do experiences and analyses tell?
 - What to do in the medium-term?
 - Macroeconomic policies
 - Regulation and supervision
 - International financial architecture
-

Some macro-financial linkages issues have been studied

- Theoretical channels linking financial factors to business cycles
 - Wealth and substitution (direct) effects
 - Credit channel
 - Financial accelerator (indirect) effects
 - Bernanke & Gertler (1989), Kiyotaki & Moore (1997)
 - Fisherian (1933) deflation stories
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But still many questions...

As quotes of policy makers show

"We believe the effect of the troubles in the sub-prime sector on the broader housing market will likely be limited, and we do not expect significant spillovers to the rest of the economy or to the financial system"

Ben Bernanke, Chairman of the FRB, May 15, 2008

"... asset-price-bust recessions do not appear to be necessarily more costly than other recession episodes. Specifically, ..., recessions that follow swings in asset prices are not necessarily longer, deeper, and associated with a greater fall in output and investment than other recessions..."

Roger W. Ferguson, January 12, 2005

Ferguson was the Vice Chairman of the FRB over 1997-2006

Both Theoretical and Empirical Questions

- Generally, relationships between credit, asset price movements, and economic activity not well understood, especially not in recessions
 - So far only small sample of (cases) studied
 - Often extrapolate single country cases, of limited value given rare events
 - Know little about the global aspects of these events, coinciding or not
 - Provide stylistic facts to explain by (further) research
-

Three specific questions: how bad, how long, how global?

- How long do recessions, credit crunches and asset price busts last, and how severe/deep are they?
- Are recessions associated with credit crunches and asset price busts different than other recessions?
- Are recessions, crunches and busts synchronized globally?

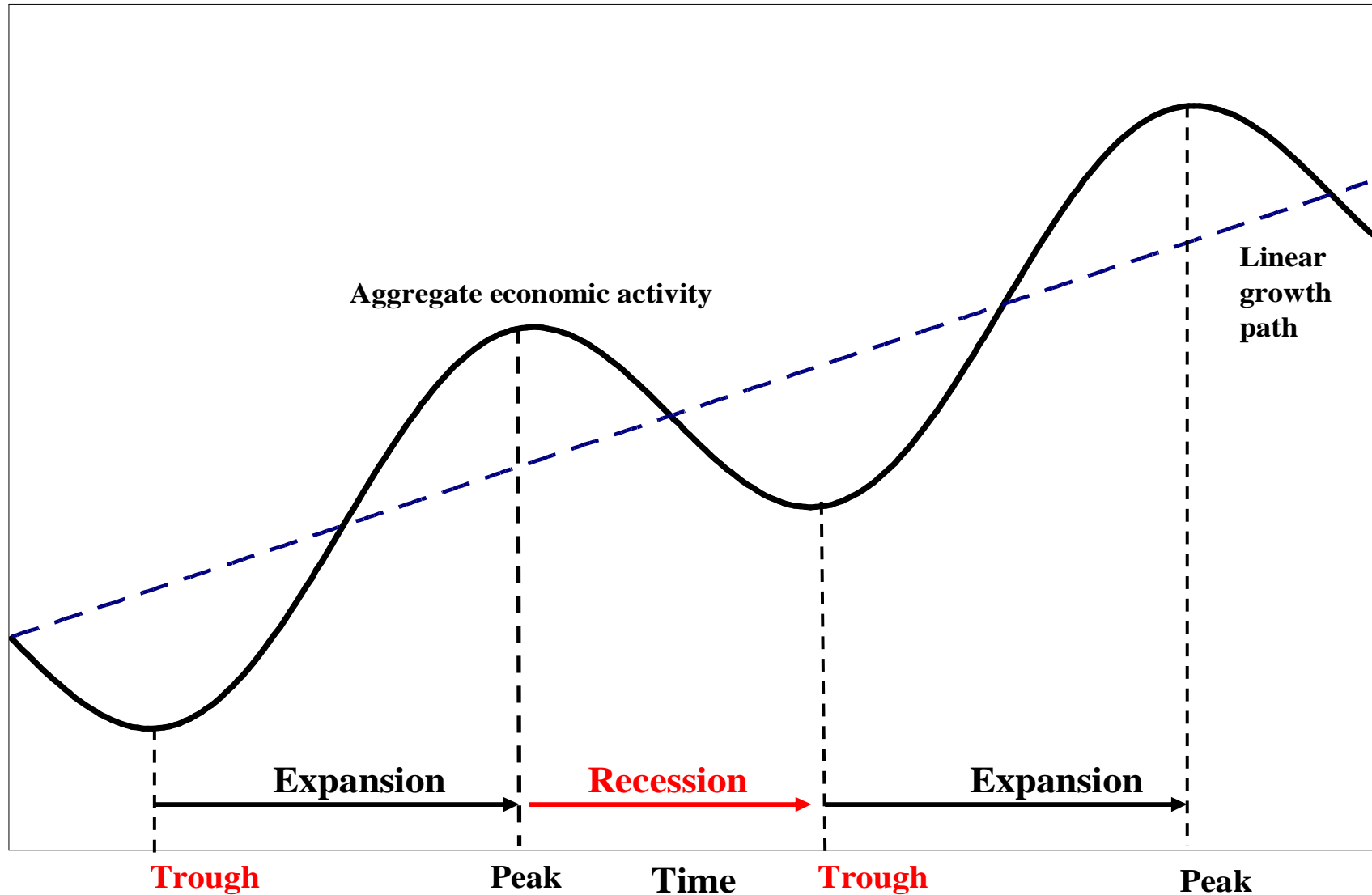
Methodology: comprehensive analysis of 122 recessions, 28 credit crunches, and 28 housing busts in 21 OECD countries over 1960-2007

(purely statistical exercise; event study; no discussion of causation or potential sources)

Methodology: Cyclical Turning Points

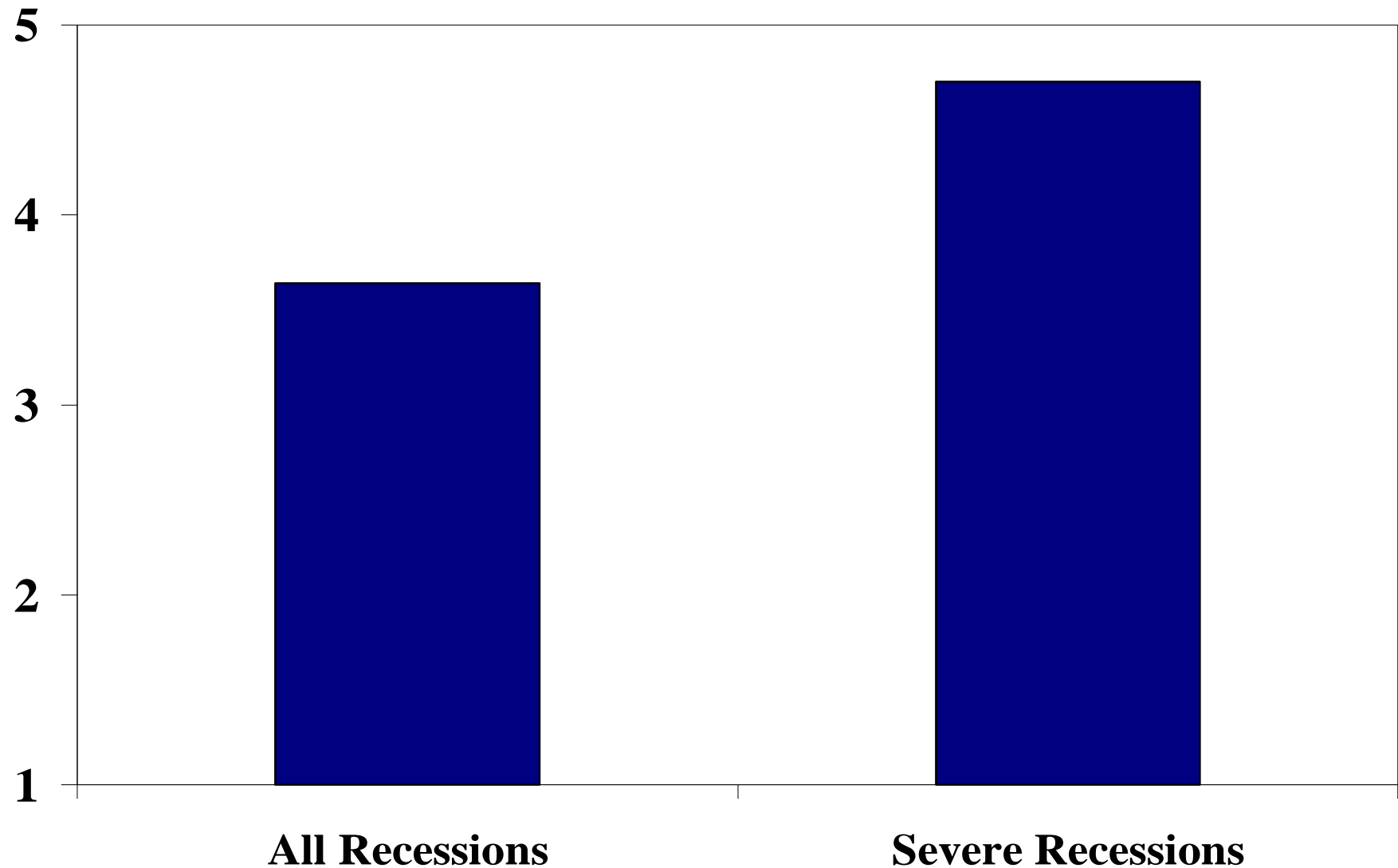
- Find turning points in macro and financial variables using a business cycle dating algorithm
 - Identify Recessions, Credit Contractions, Asset (House & Equity) Price Declines Episodes
 - **Severe Recession:** a peak-to-trough decline in GDP in the worst quartile of all declines
 - **Credit Crunch:** a peak-to-trough contraction in credit in the worst quartile of all credit contractions
 - **Asset Price Bust:** a peak-to-trough decline in asset prices in the worst quartile of all price declines
-

Evolution of Business Cycle



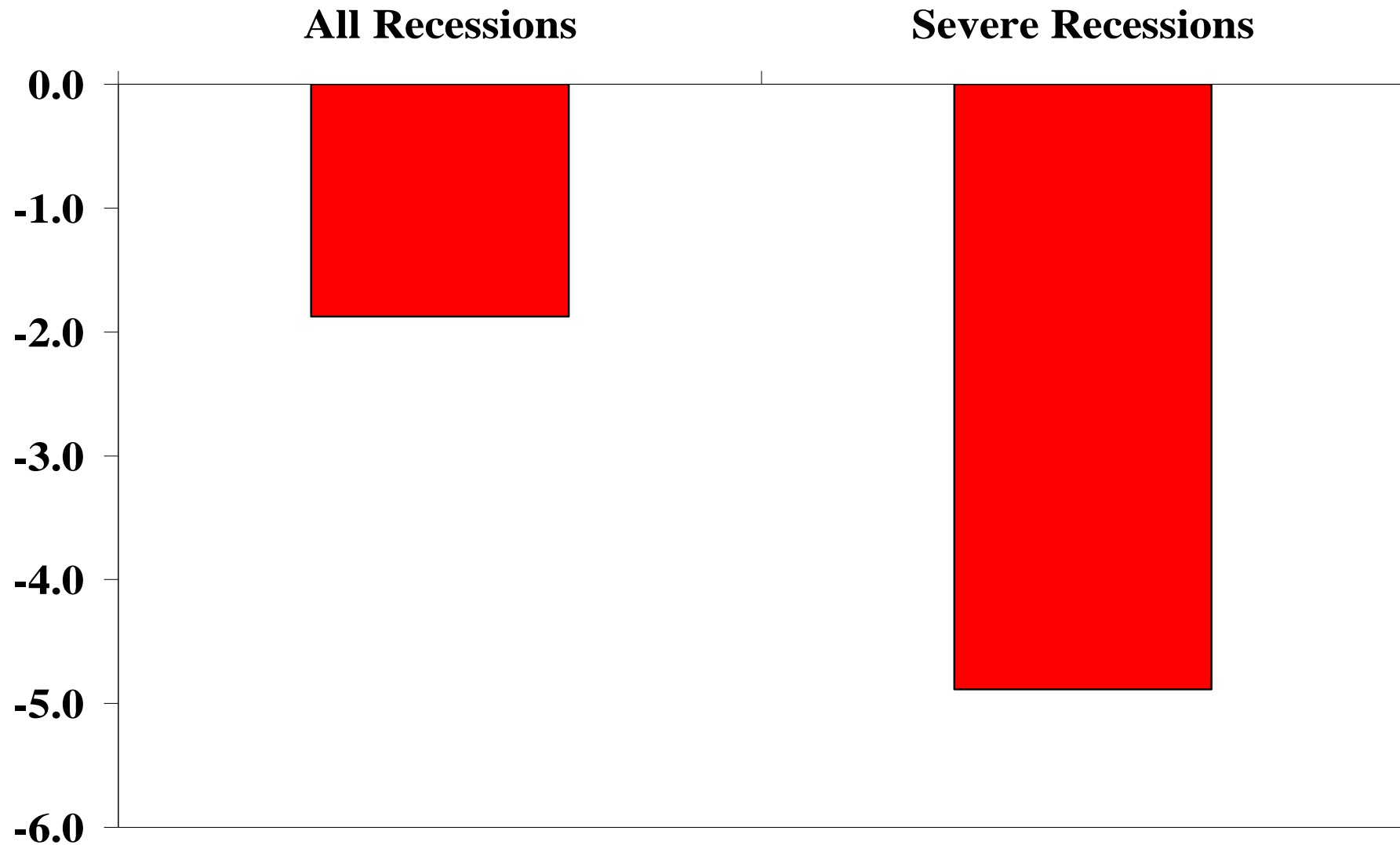
Typical Recession Lasts 4-5 Quarters

(# of quarters from Peak to Trough)



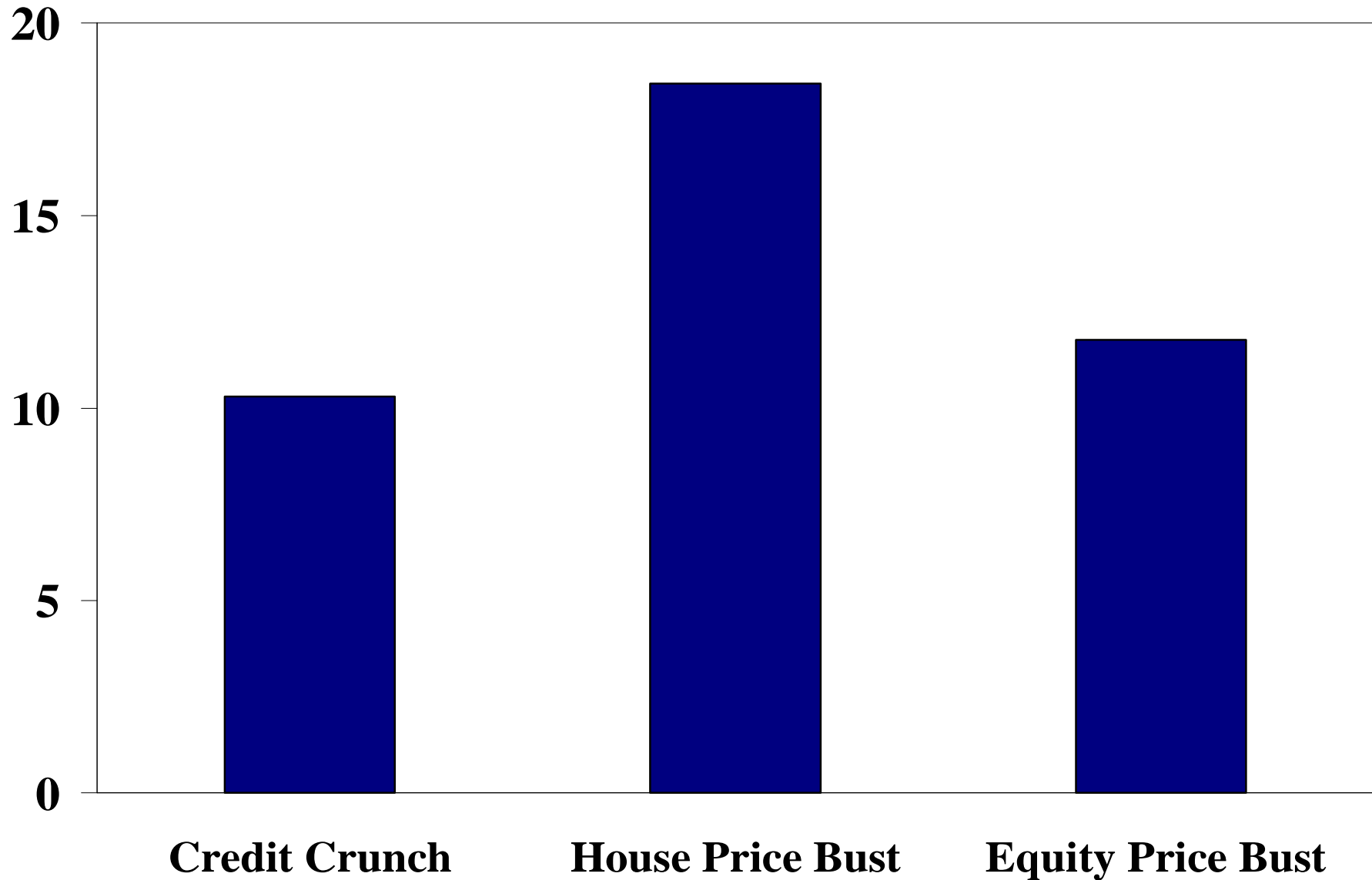
But Recessions Vary Greatly in Severity

(percent change in GDP from Peak to Trough)



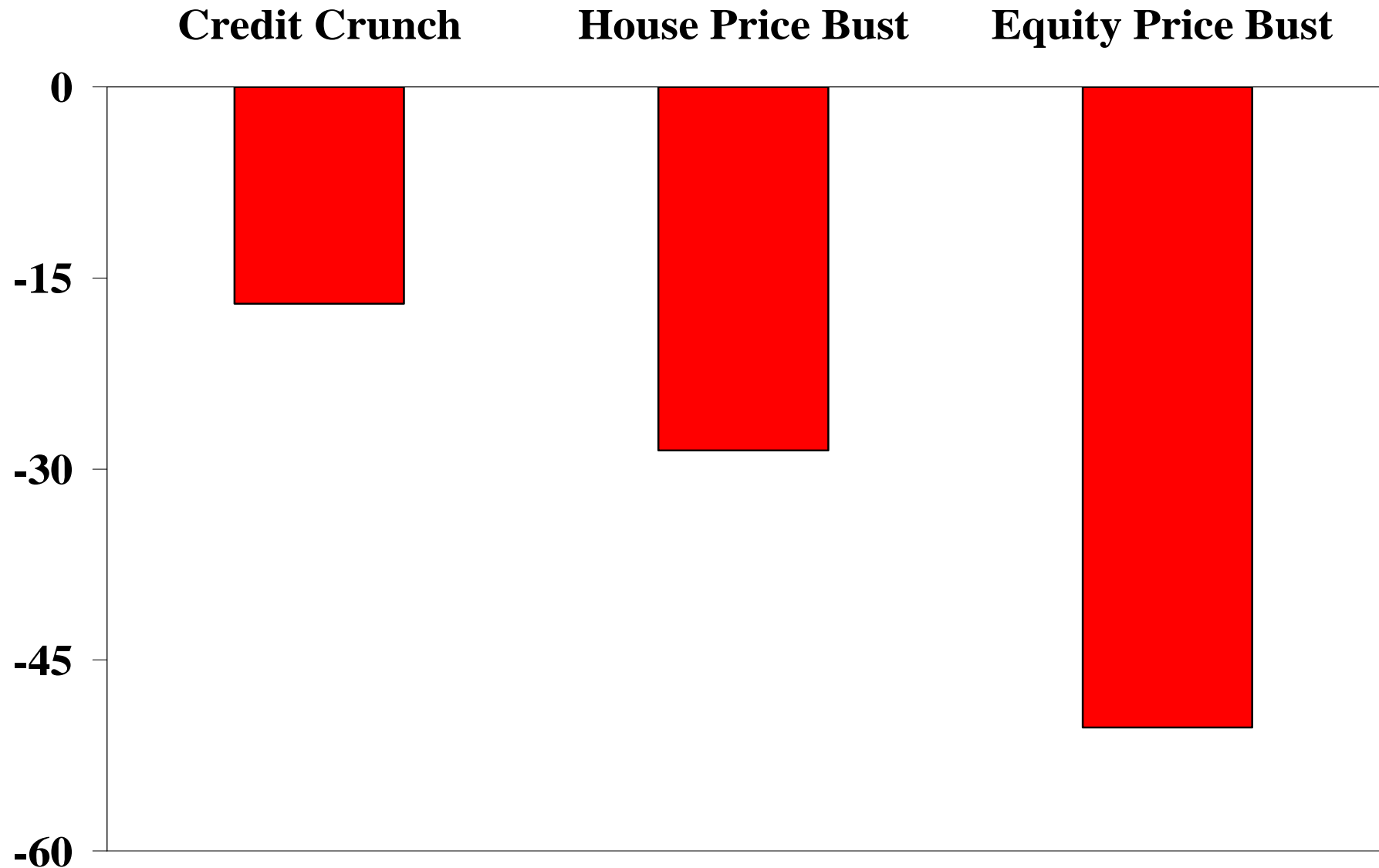
Crunches and Busts Last Much Longer

(# of quarters from Peak to Through)

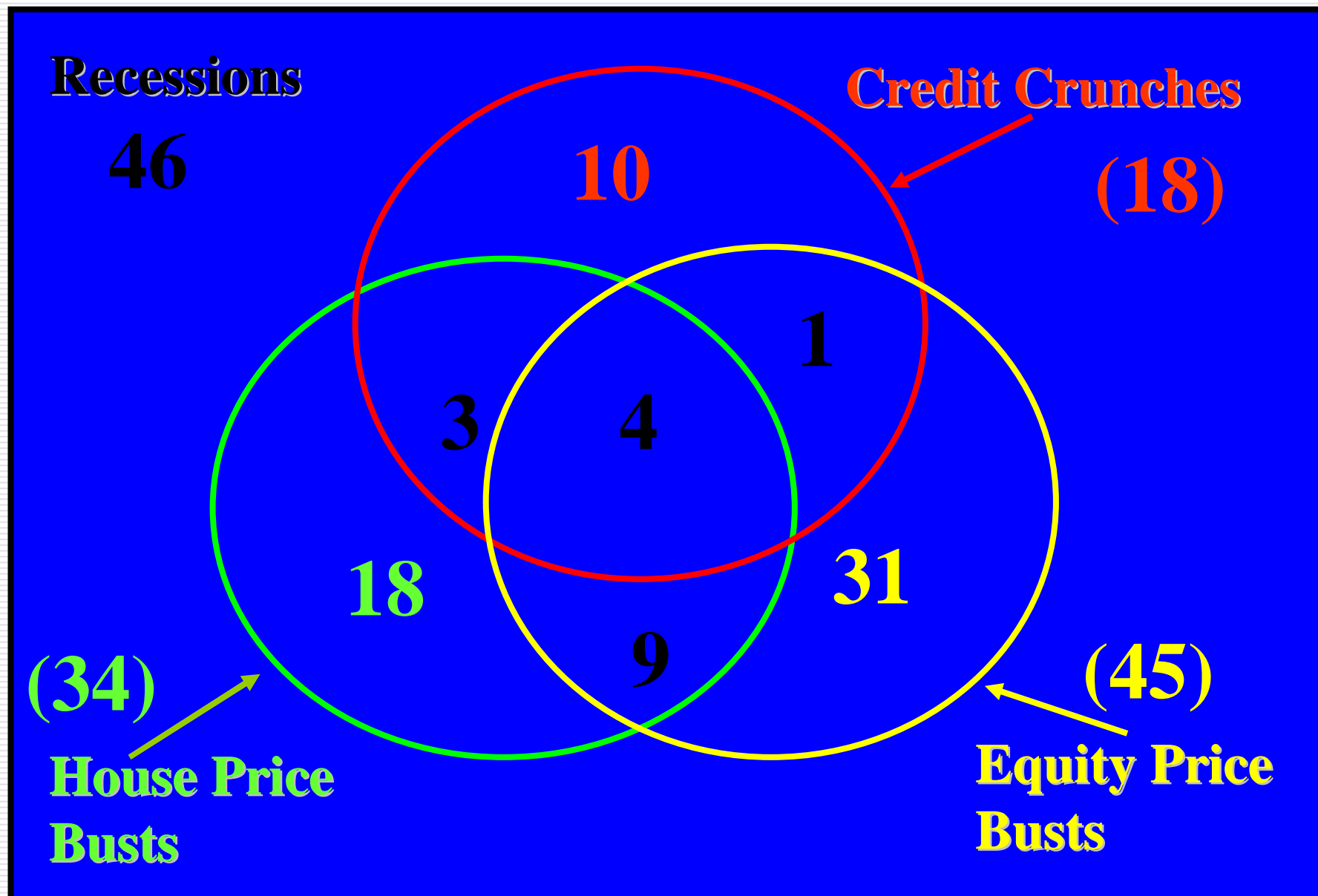


And Have Larger Amplitudes

(percent change from Peak to Trough)

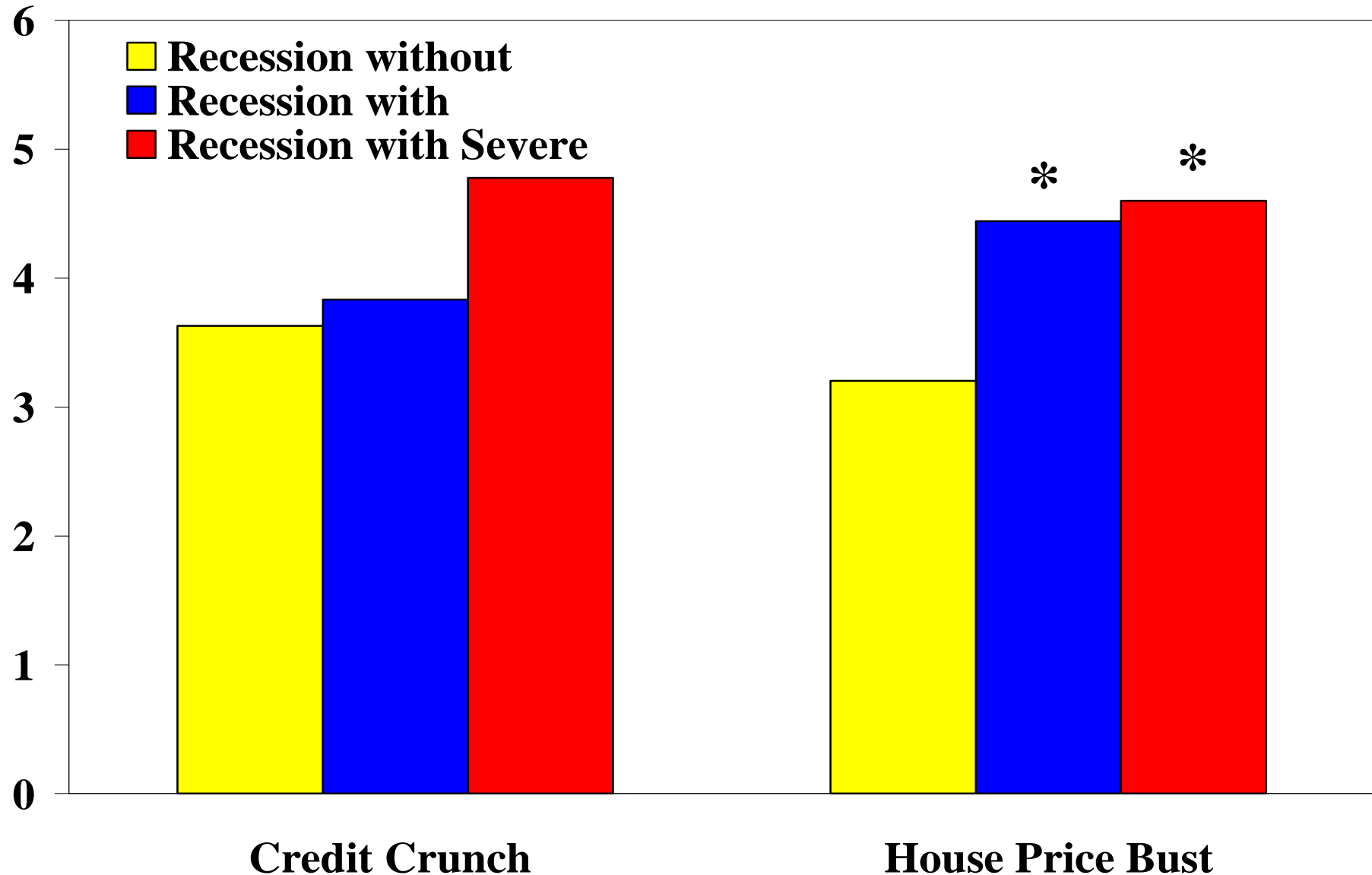


Associations: Recessions, Crunches & Busts



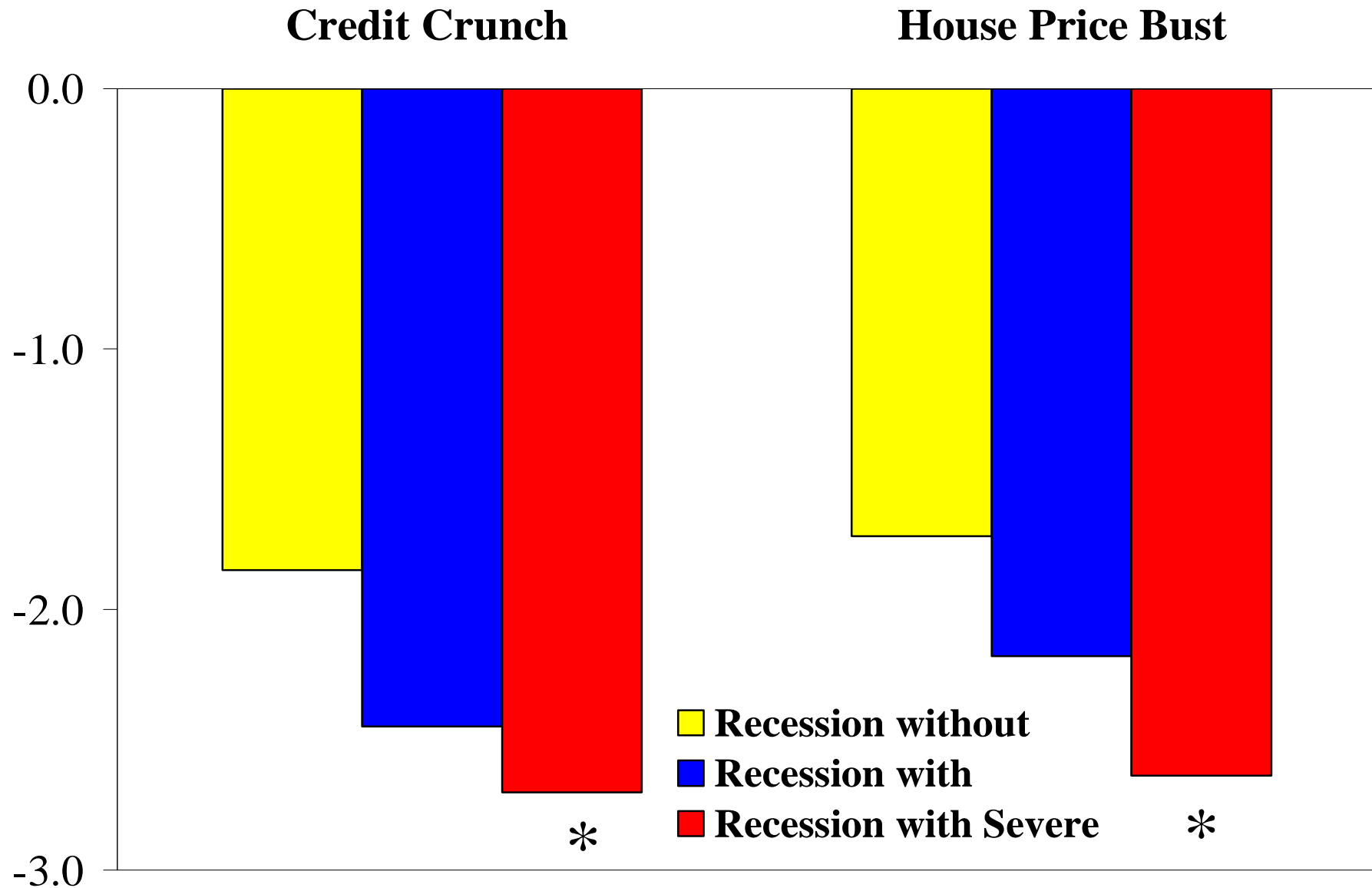
Recessions w/ Crunches and Busts Last Longer

*(# of quarters from Peak to Trough; * is statistically significant)*



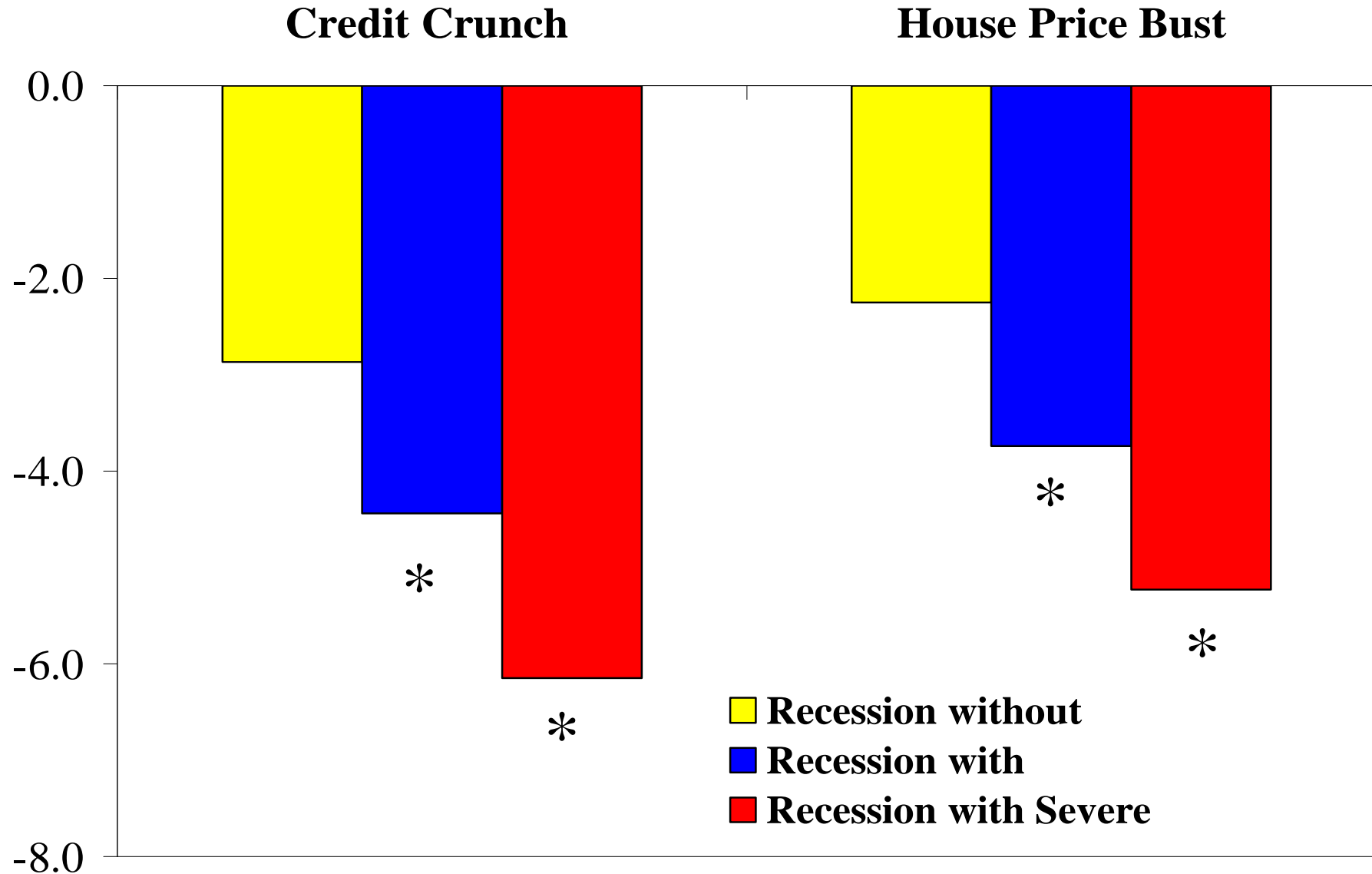
Recessions w/ Crunches/Busts: Greater Declines

(GDP percent change from Peak to Trough)



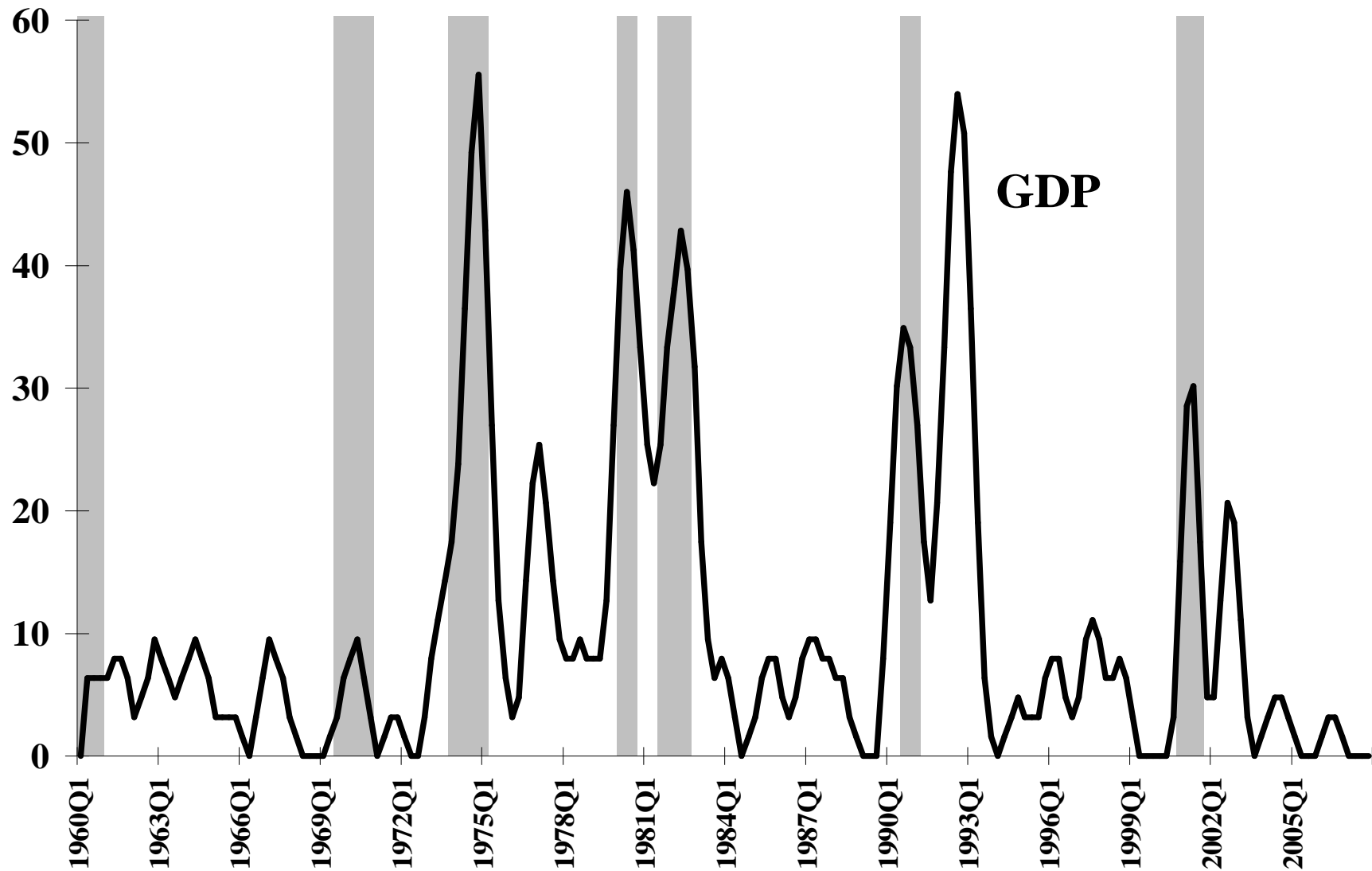
Recessions w/ Crunches/Busts: Larger Losses

(Cumulative GDP loss, percent, from Peak to Trough)



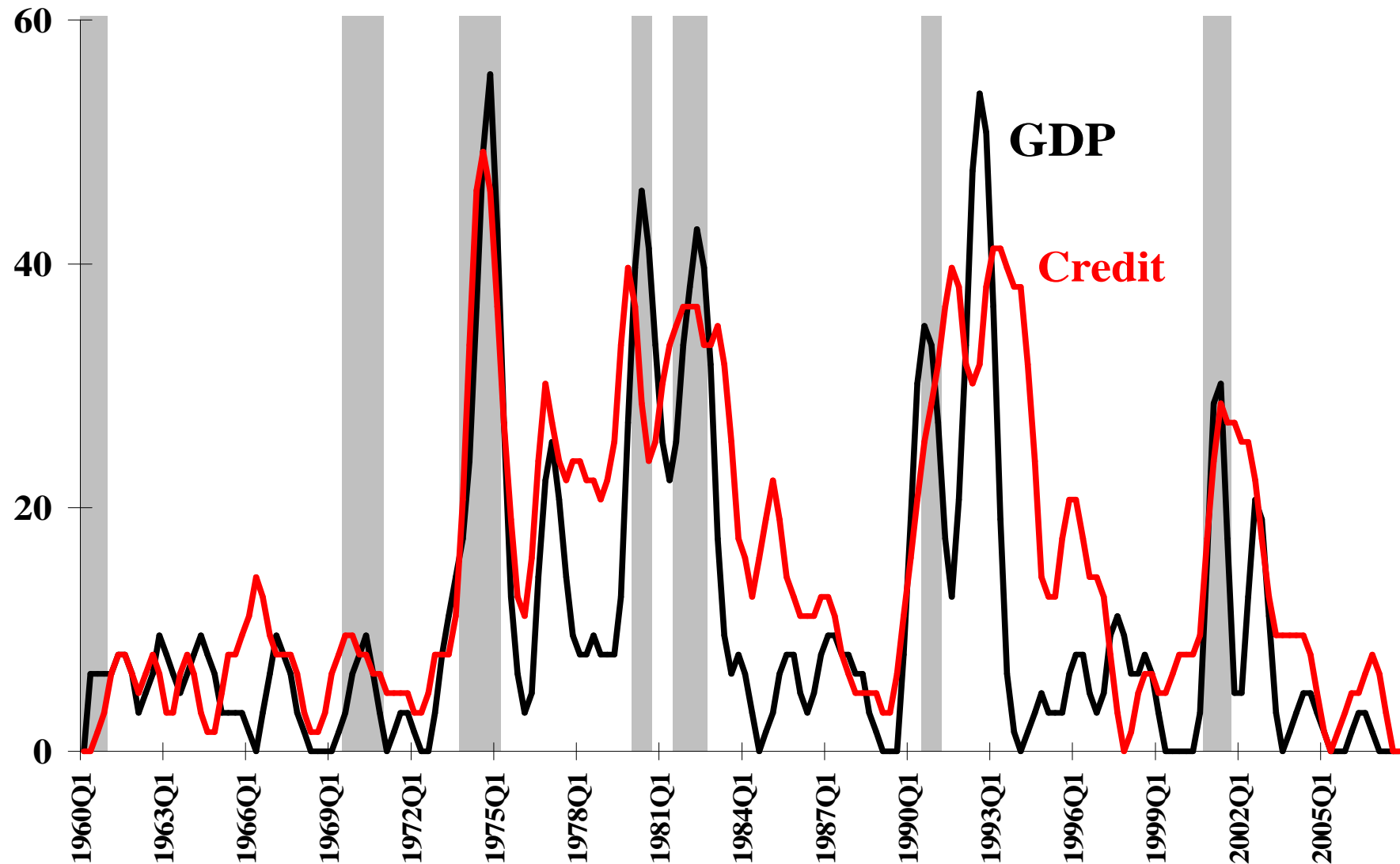
Recessions Come in Bunches

(fraction of countries in recession; shaded bars are US recessions)



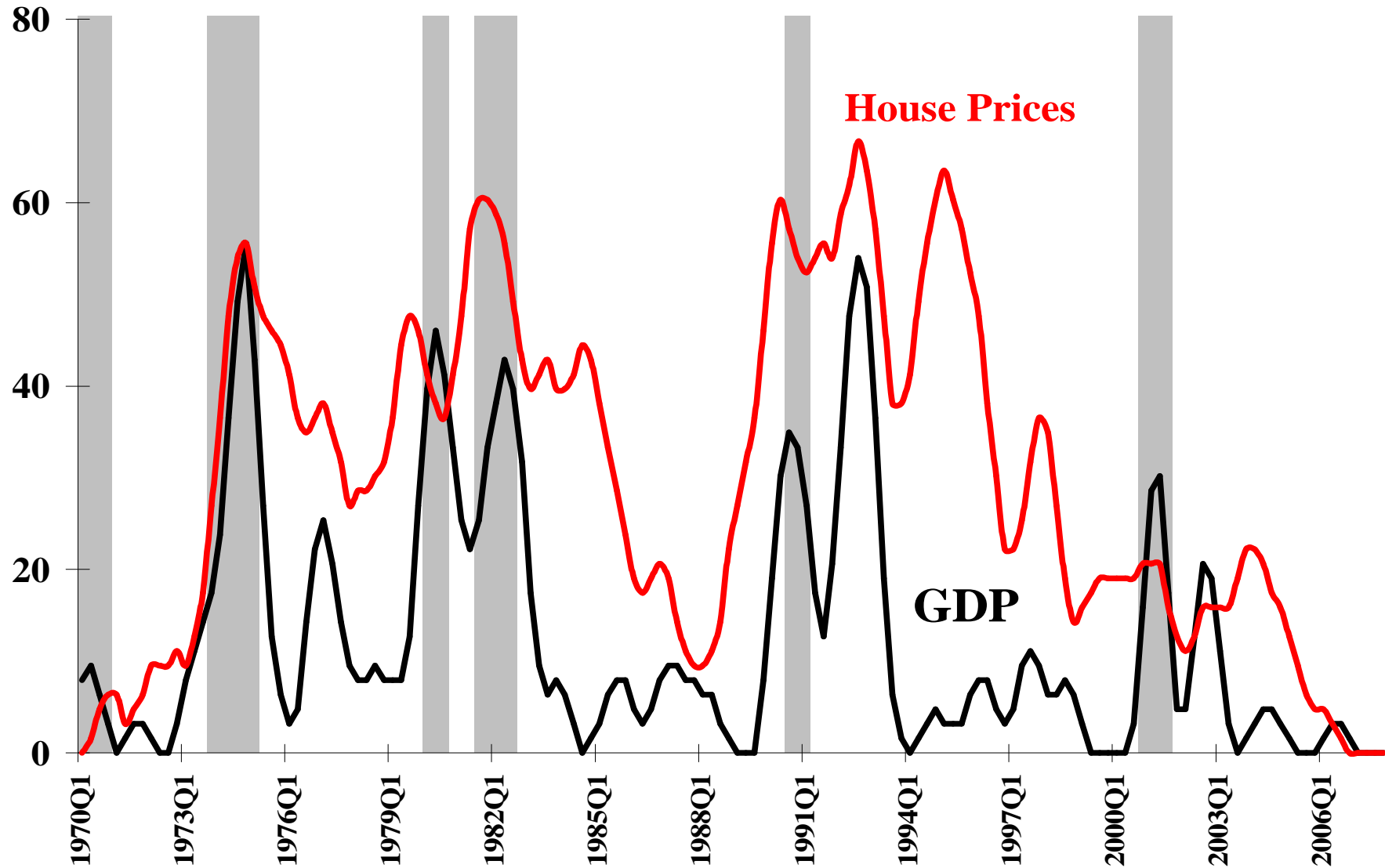
Recessions and Credit Contractions Overlap

(fraction of countries, shaded bars are US recessions)



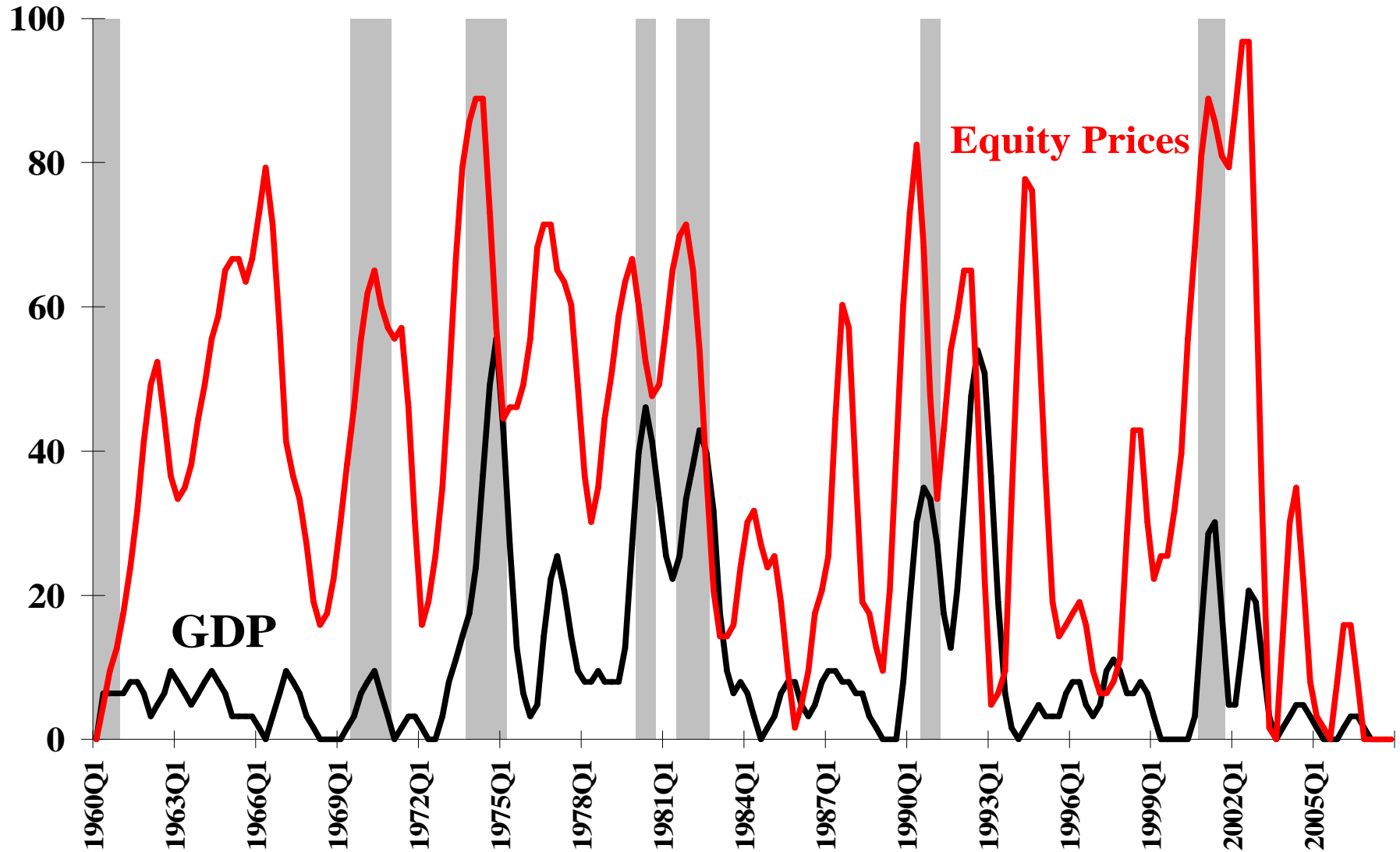
Recessions and House Contractions Less So

(fraction of countries; shaded bars are US recessions)



Recessions and Equity Coincide Even Less

(fraction of countries, shaded bars are US recessions)



In summary: recessions combined with financial stress can be very severe

- ❑ Financial stress episodes last a long time, much longer than recessions, and can be deep
 - ❑ Recessions associated with crunches and busts tend to be longer and deeper
 - ❑ Larger drops in house prices tend to be associated with more costly recessions
 - ❑ Recessions, crunches and busts are synchronized globally
 - ❑ Synchronized recessions are worse
-

Limitations / Future Research on Financial Crises and Business Cycles

- ❑ Larger sample of business and financial cycles
 - ❑ Alternative metrics of economic activity (output gap)
 - ❑ Different patterns in financial stress/crisis episodes
 - ❑ Interactions with global business cycles and emerging market cycles
 - ❑ Identifying causes/shocks driving these recessions
 - ❑ Micro/corporate behavior around recessions/busts
-

Current financial crisis

Unprecedented policy actions

□ Principal forms of intervention

- (i) liquidity provision; (ii) support for wholesale funding markets; (iii) guarantees of retail deposits and other liabilities; (iv) purchases or exchanges of non-performing or illiquid assets; and (v) capital injections in banks, other FIS
- Very accommodative monetary and fiscal policy

□ Financial sector and fiscal actions

- Although pulled from brink of collapse, measures too late to prevent adverse feedback loops
 - Now risks of severe recessions/depressions
 - Conventional monetary reaching its limits
 - Fiscal stimulus, coming, but slower/too little
-

Current financial crisis

Actions to date may not be enough

- More, rapid and bold actions are needed
 - Covering financial sector comprehensively
 - Including housing, and generous fiscal stimulus
 - Emerging markets' problems
 - Contingency plans to deal with worse/worst
 - And external official financing to stop spiral
 - More generally, cross-border problematic
 - Some “predictable” events could be averted
 - However, hard to coordinate, design and implement global or regional solutions
-

Severity of systemic financial crises depends greatly on policy coherence

- Systemic banking crises: plentiful
 - Typically go through three phases
 - Containment
 - Financial sector restructuring
 - Corporate restructuring
 - Policy choices affect speed of recovery and real/fiscal costs
-

Phases in a systemic crisis

1. Containment Phase

- While the distress is unfolding
- Often critical

2. Restructuring Phase

- Financial restructuring: rehabilitation, restructuring, loss-allocation, recapitalization of institutions
- Corporate restructuring: large scale restructuring

3. Deeper Reform Phase

- Fundamental reforms to institutional framework and ownership structures
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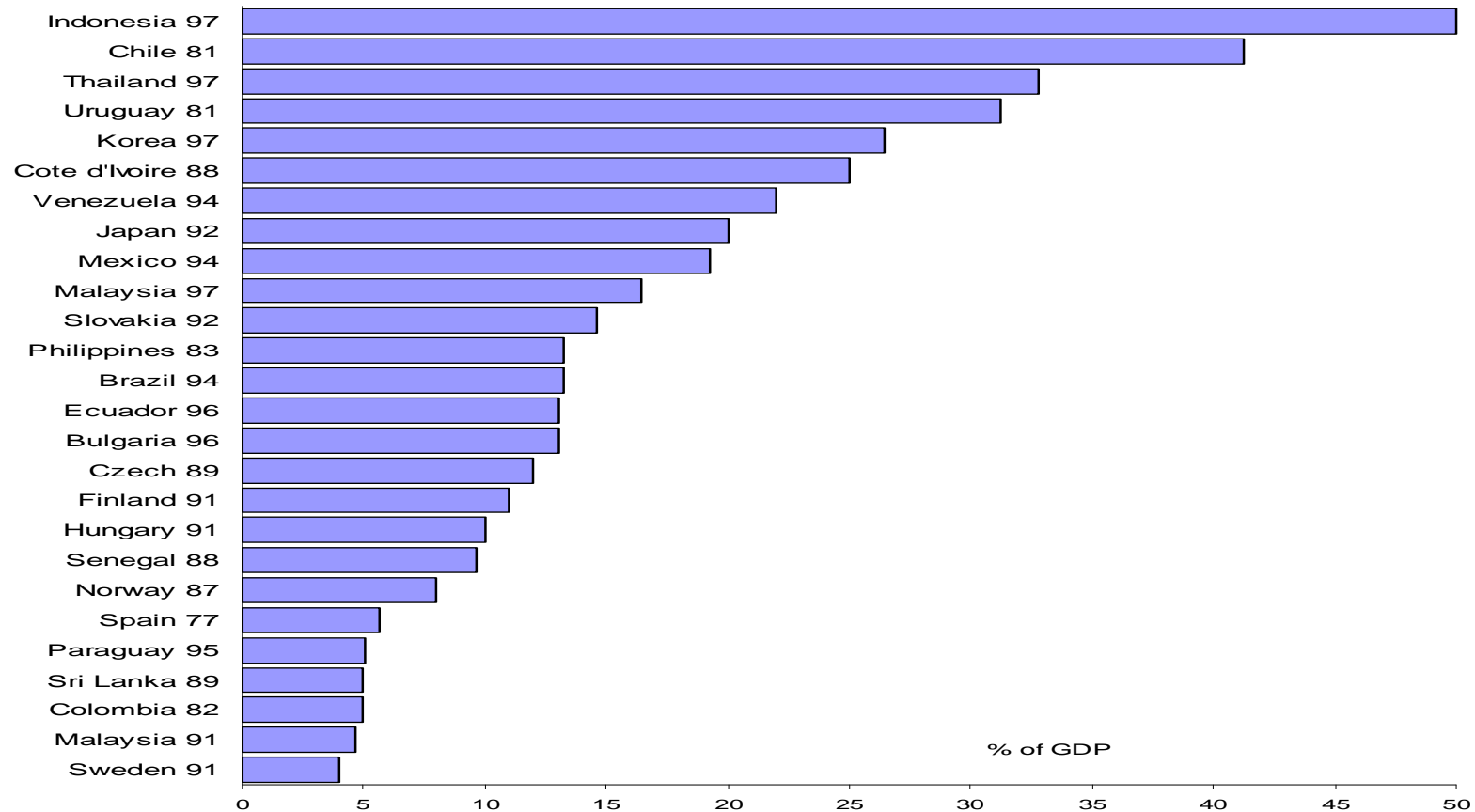
Steps in containment phase

- Onset of financial crisis
 - Acceleration of bad financing and looting
 - Open financial crisis
 - Bank runs, large liquidity support, currency crisis, interest spikes
 - Reestablish confidence/limit losses
 - Suspension of weak financial institutions
 - Limits on institutions (conservator, contractual arrangements)
 - Possibly government (blanket) guarantee
 - Stabilization
-

Critical in the containment phase

- Move early, but comprehensively
 - Do not close individual banks without an overall plan; deal with all insolvent and marginal solvent banks together to avoid guarantee
 - Prevent bad financing and looting
 - Have limits in place (conservator, contractual arrangements); use simple tools, e.g., reserve-requirements, to prevent weak banks gambling
 - Avoid large, costly liquidity support
 - Avoid blanket government guarantees
 - Very costly, limits degree of freedom
-

Differences in containment policies reflected in fiscal costs of crises



Containment phase policies explain much of fiscal costs with no obvious tradeoffs

- ❑ Crises in which government provided unlimited guarantees and liquidity support were costlier
 - ❑ Forbearance, repeated recapitalizations costly
 - ❑ Costs higher in countries with weak legal institutions and poor disclosure
 - ❑ No obvious trade-off between fiscal costs and subsequent economic growth recovery, that is, the fiscal outlay provided little return and was largely a redistribution of wealth.
-

Steps in restructuring phase

- Diagnose the problem
 - Develop proper institutional tools and framework
 - Develop a strategy for restructuring
 - Allocate losses and design government support
 - Re-privatize financial institutions and corporations
-

Critical in restructuring phase

- Allocation of losses
 - Have shareholders and creditors (and large depositors) absorb losses
 - Change management
 - Restructuring and recapitalization
 - Support good, not just bad institutions
 - Inject public capital but coshare private
 - Try to do once for all recapitalization; back up with credible closure rules
 - Do not recapitalize on a flow basis
-

Lessons for current systemic restructuring phase

- ❑ Limit support, avoid costly policies early in a financial crisis; always support winners, not losers
 - ❑ Act comprehensive, with all tools
 - ❑ Use private sector, but not banks, to do actual, deep corporate and financial restructuring
 - ❑ Design loss-absorption mechanisms around this
 - ❑ Government to focus on enabling environment for private sector to restructure
 - ❑ Consistency and dealing with political economy factors key ingredients to successful and least costly restructuring
-

Lessons for the Medium-Term: Macroeconomic Policies I

- Monetary policy and asset bubbles
 - “Doctrine:” 1. too hard to predict bubbles; 2. too blunt to stop; 3. easier to clean up
 - Learned less valid when financial sector is involved and leverage is increasing
 - And while regulation and supervision should be first defense, may not suffice
 - Macro-financial stability needs own mandate
 - Fiscal policy
 - Build buffers in good times create headroom
 - Adjust tax policy to discourage leverage
-

Lessons for the Medium-Term: Macroeconomic Policies II

- Global imbalances
 - Played a role in build up of systemic risk
 - Contributed to lower interest rates ⇒, added to yield search, higher leverage, create riskier assets
 - But faults largely deficient regulation supervision
 - International finance on the whole beneficial
 - While benign neglect a mistake, not curtail capital flows
 - Rather review when/how to react to large imbalances, through macroeconomic & structural
 - Examine prudential measures to reduce systemic risk associated with large capital inflows
-

Lessons for the Medium-Term: Regulation and Supervision I

□ Regulatory perimeter

- Broader in information, consistent in activities
- Consider systemic risk/interconnections more

□ Market discipline

- Reduce conflict of interests, encourage due diligence
 - Discourage too large/connected etc.
 - Better resolution frameworks
-

Lessons for the Medium-Term: Regulation and Supervision II

□ Procyclicality

- Prudential regulation: buffers, leverage ratio, provisioning through the cycle
- Accounting: complement mean with variance
- Compensation: risk based and long-term

□ Information

- Reduce gaps, national and international
-

Lessons for the Medium-Term: International Financial Architecture I

□ Surveillance

- Less fragmented, deeper, more integrated, more EWS, better communicated

□ Multilateralism

- More coordinated, ex-ante and ex-post
 - With commensurate changes in governance
-

Lessons for the Medium-Term: International Financial Architecture II

□ Financial regulation

- Greater convergence in practices & rules
- Especially cross-border, burden sharing

□ Financing

- Larger insurance/ex-ante liquidity/financing mechanisms, backed-up
-