

Origin and Propagation of the Financial Crisis

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Greg Howard provided invaluable assistance

Searching for a story ...

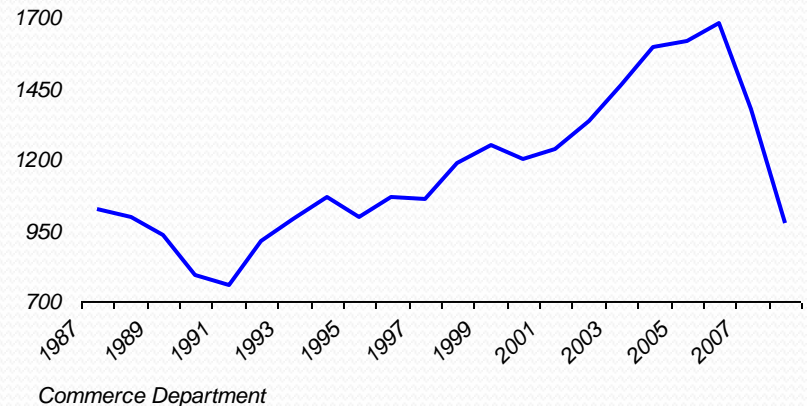
- To explain what happened to us all
- The correct narrative is important to
 - Apportion responsibility
 - Take remedial action
- Undercounted in the popular narrative are the roles of
 - **International factors** in facilitating housing excesses and worsening the downturn
 - **Policy mistakes**
- Presentation today:
 - Origin of the problem
 - The downturn
 - Propagation
 - Policy missteps
 - Policy opportunities

The origin of the problem

The U.S. housing market had a remarkable, decade-long run.

- Fundamentals supported housing demand for much of the 90' and 00's.
- The growth of real disposable income was solid.
- Real mortgages rates were low.
- Demographics were favorable,
 - The baby-boom generation was aging and
 - The nation had a large influx of immigrants a decade earlier. .
- House price increases reinforced the expectation of capital gains.

Single-family house permits
Units, thousands



Lest we forget,

- The U.S. government provides considerable encouragement to homeownership
 - The housing-related GSEs
 - Tax preferences
 - Regulatory guidance
 - Community Reinvestment Act
 - Reporting under HMDA
 - Affordable housing goals

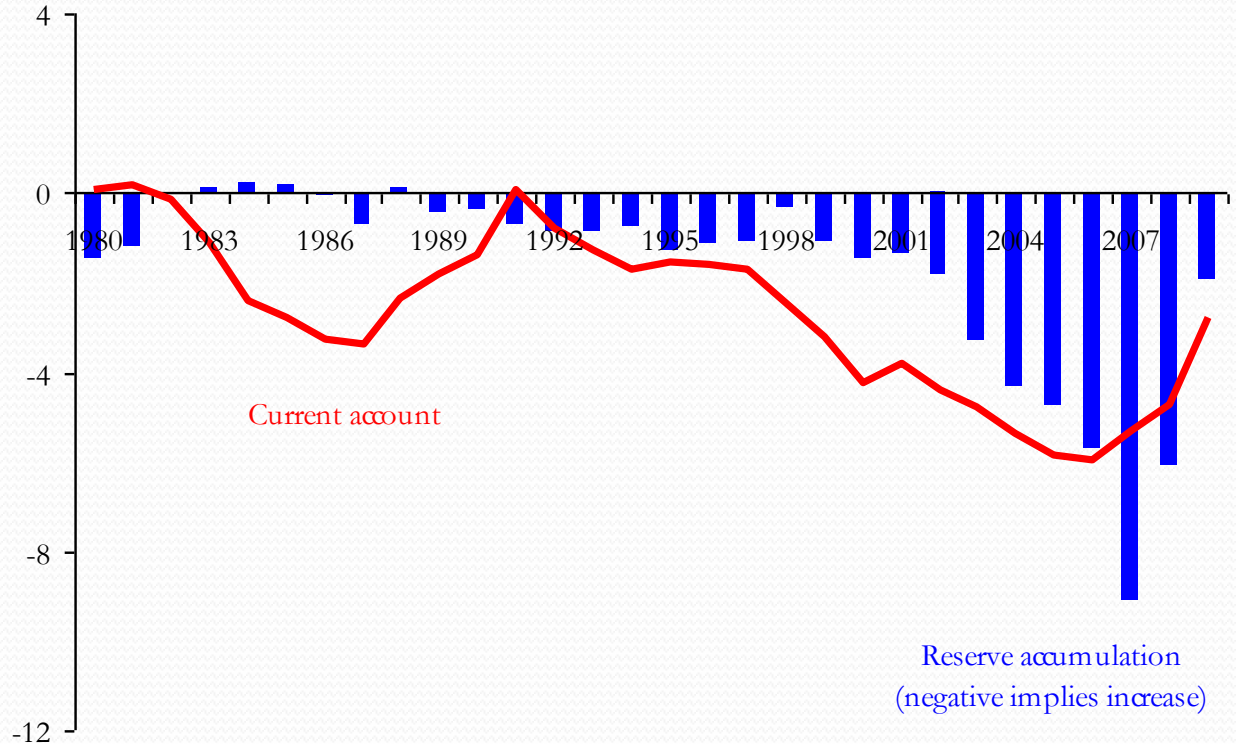
- There are limited avenues for wealth creation at the lower end of the income distribution

Family characteristic	Families with holdings			
	1995	1998	2001	2004
All families	40.4	48.9	51.9	48.6
<i>Percentile of income</i>				
Less than 20	6.5	10.0	12.4	11.7
20-39.9	24.7	30.8	33.5	28.8
40-59.9	41.5	50.2	52.1	49.2
60-79.9	54.3	69.3	75.7	66.5
80-89.9	69.7	77.9	82.0	82.5
90-100	80.0	90.4	89.6	91.0

International capital flows facilitated funding the housing boom

- As global investors funded the U.S. current account deficit
- This funding
 - Altered the composition of finance
 - Kept the level of long-term rates low

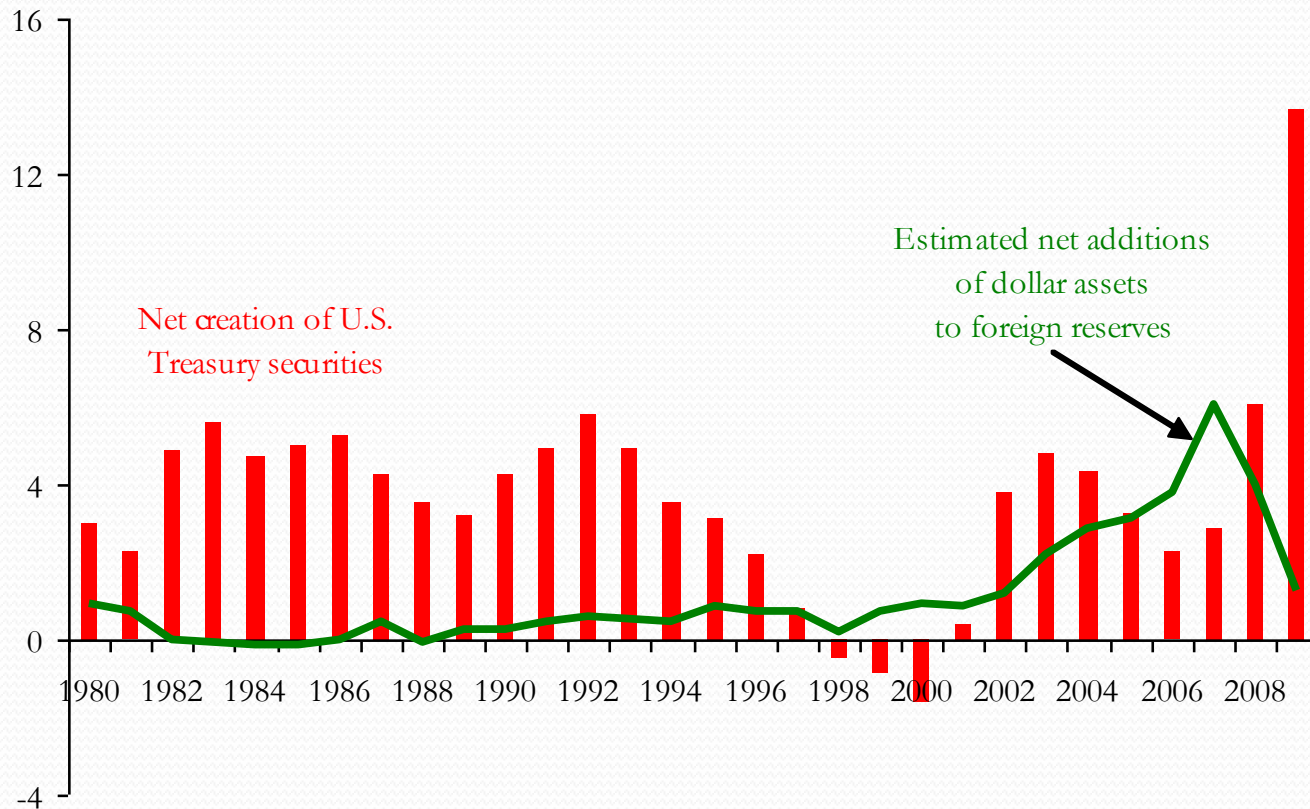
U.S. current account balance and reserve accumulation by emerging market economies
relative to U.S. nominal GDP, percent



Source: International Monetary Fund *World Economic Outlook* (4/09)

Official demands tilted heavily toward government securities

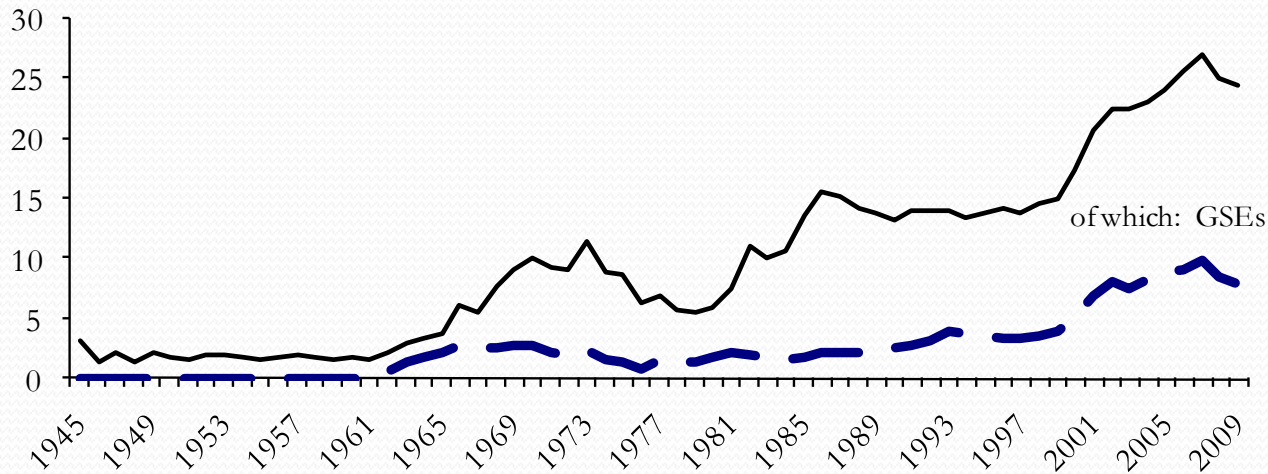
Net creation of U.S. Treasury securities and net additions to foreign U.S. dollar reserves
relative to U.S. nominal GDP, percent



Source: International Monetary Fund *World Economic Outlook* (4/09)

The foreign private sector increased its exposure to U.S. private credit

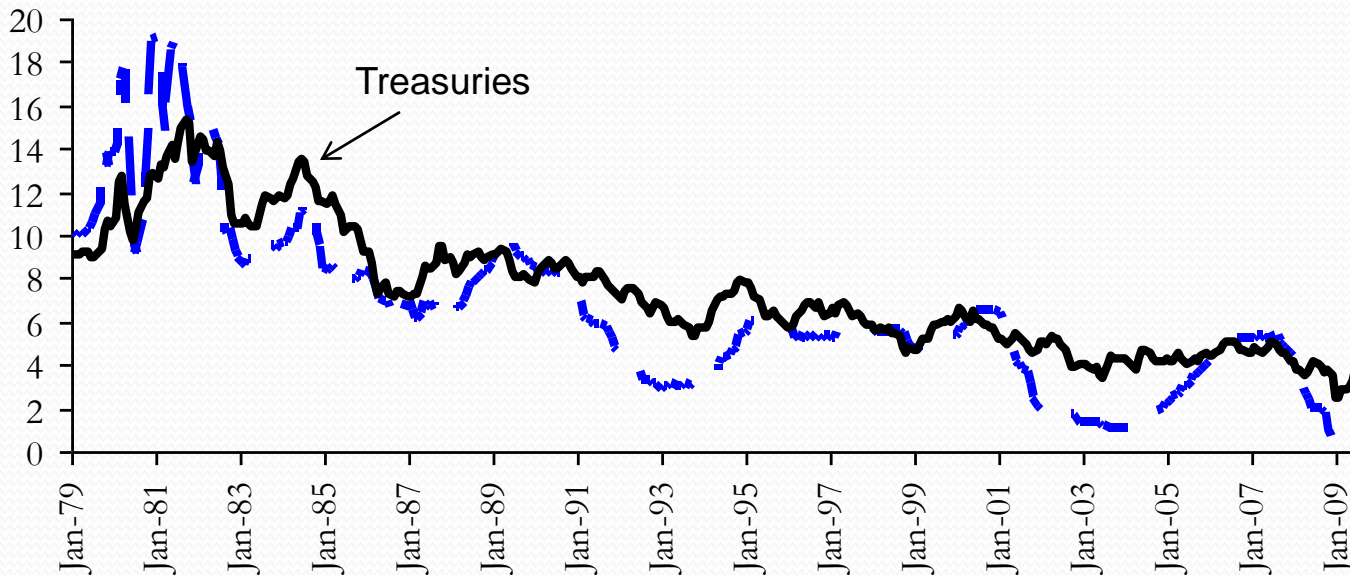
Foreign exposure to U.S. private credit
share of total U.S. assets held by the foreign sector, percent



- Foreign official entities loaded up on Treasuries
- U.S. financial engineers constructed triple-A exposure to the U.S. for foreign banks
 - Leaving bits and pieces on the cutting room floor

Global saving kept U.S. long-term interest rates low

Fed funds and Ten-year Treasury rates
percent



Source: FRED

...and disconnected from the policy rate

Simple correlation between monthly changes in interest rates

Fed funds rate with:

Ten-year

Thirty-year

Over the period:

Treasury

FRM

2/1979 to 12/1987

0.40

0.58

1/1988 to 6/1996

0.34

0.40

7/1996 to 12/2001

0.03

0.13

2/2002 to 12/2006

-0.05

0.13

1/2007 to 6/2009

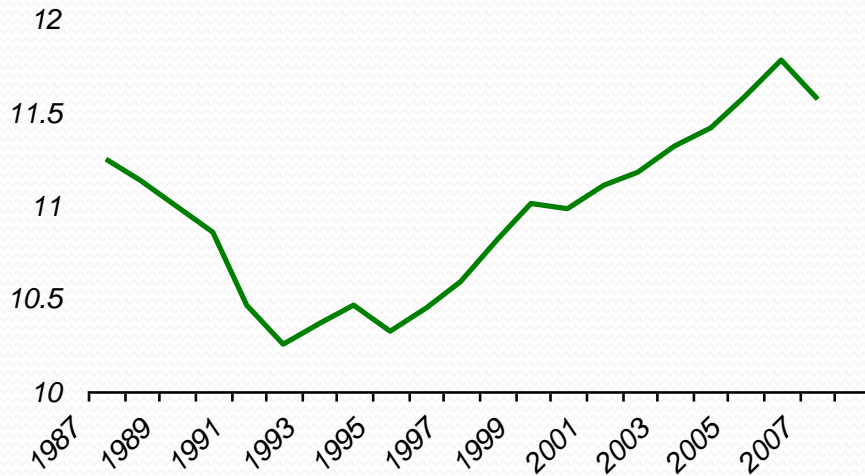
0.25

0.08

Real resources shifted to meet this growing demand for housing

Employment in construction and finance

Share of total employment, percent



Bureau of Labor Statistics

- Fundamentals softened
 - As the Fed raised interest rates
 - Economic growth slowed
 - The nation looked less favorably on immigration
 - Some buyers were priced out of the market
- Those working in the industry stretched to keep demand high
 - Cutting standards and terms on lending
 - Outright fraud

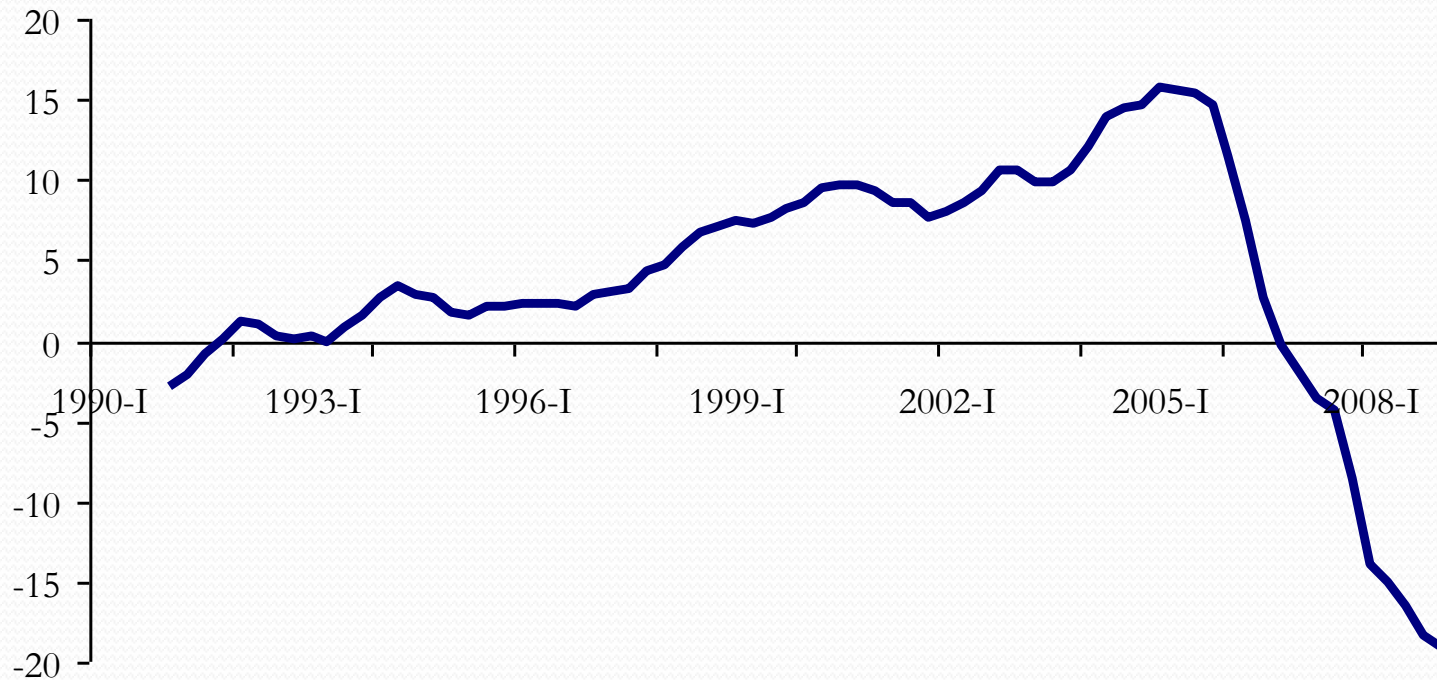


The downturn

The Bubble Bursts

Case-Shiller national home price index

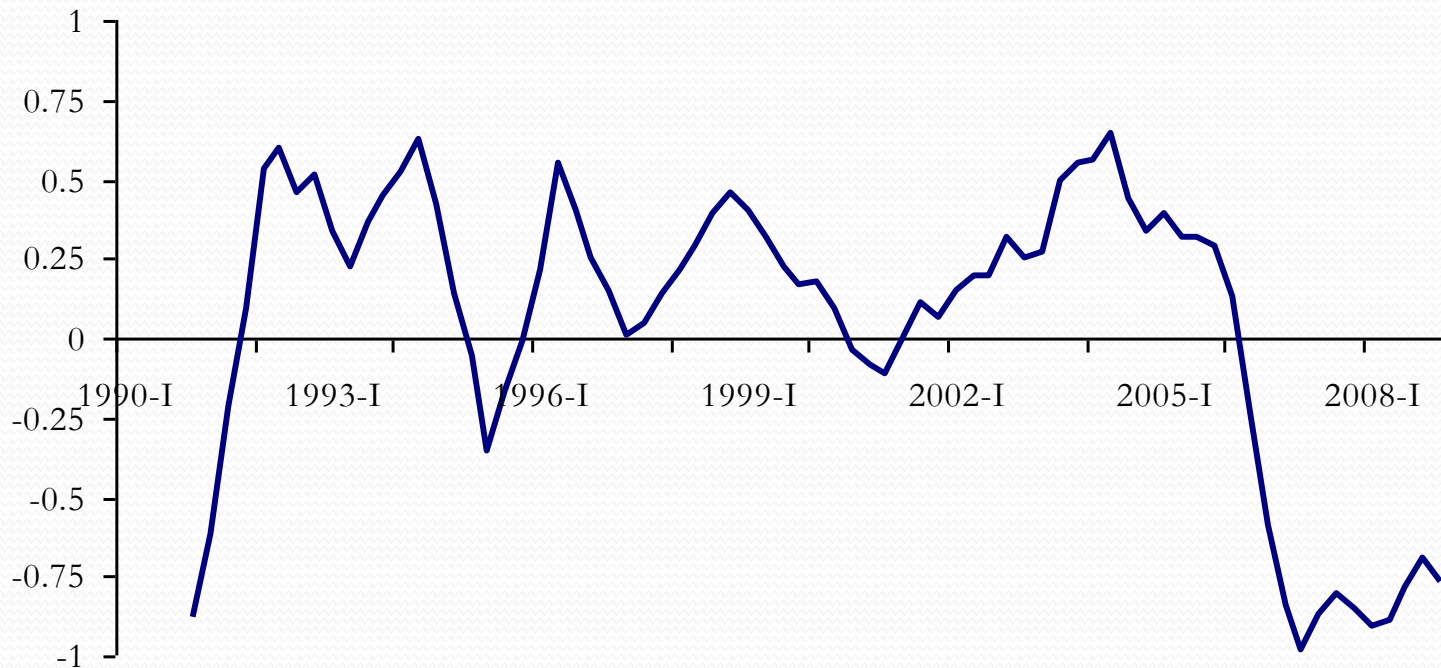
Four-quarter change, percent



Source: Case-Shiller S&P

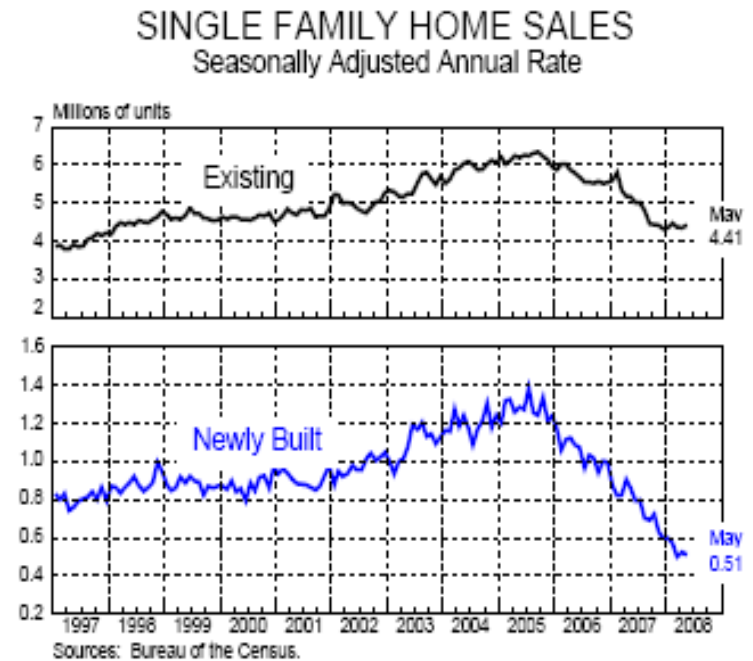
... and activity contracts

**Contribution of real residential construction to
GDP growth rate, percent**



Source: Bureau of Economic Analysis

This poses three distinct drags on spending



1. The direct inventory correction as builders cope with excess stocks.

2. The end of the bubble has hit household balance sheets

Reductions in house prices are reducing wealth, slowing consumption growth.

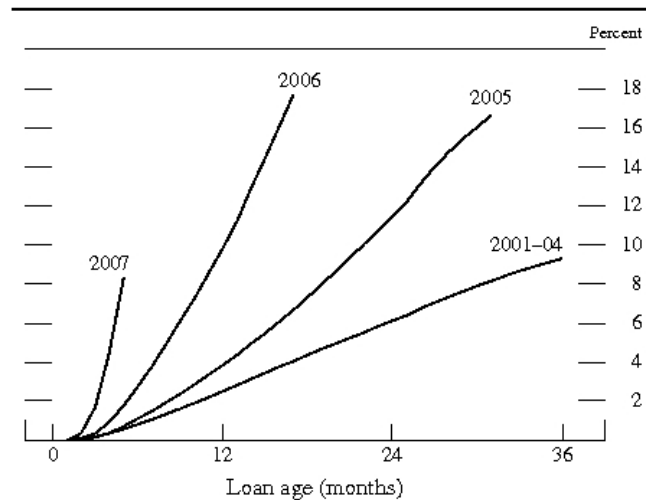
Aggregate household balance sheet

\$trillions,
2007:Q3

Assets	73	Liabilities	14
<i>Real estate</i>	23	<i>Mortgages</i>	10
<i>Financial</i>	45	<i>Consumer Credit</i>	2.5
<i>Durable Goods</i>	4	Net worth	59

3. And households have defaulted on their mortgages . . .

Cumulative defaults on subprime 2/28 loans, by year of origination, 2001-07

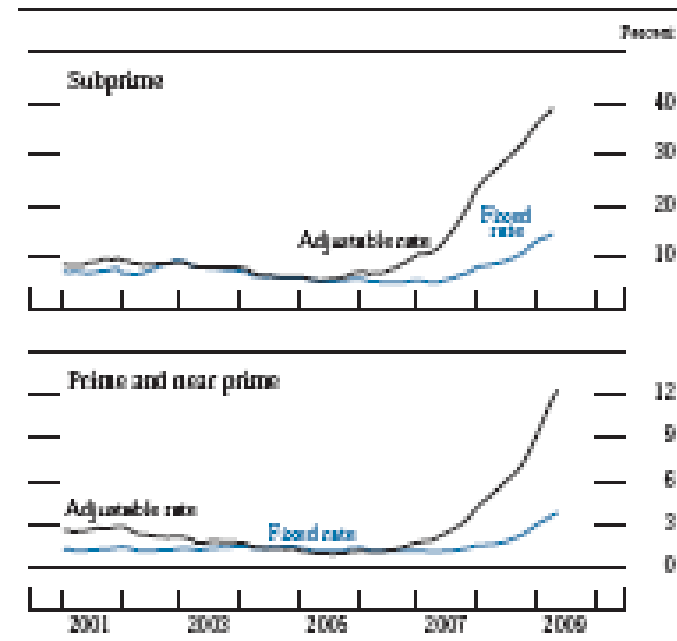


NOTE: The data are monthly and extend through November 2007. Each series represents the fraction of loans originated in the indicated year that had defaulted by the indicated loan age; for example, roughly 6 percent of all loans originated sometime in the years 2001 to 2004 had defaulted by the time they were twenty-four months old. The last nine values for the three series covering 2005-07 are based on incomplete data. A 2/28 loan is a thirty-year loan with a fixed rate for the first two years and an adjustable rate for the remaining twenty-eight years.

SOURCE: Staff calculations based on data from First American LoanPerformance.

days or more past due or in foreclosure.
SOURCE: First American LoanPerformance.

5. Mortgage delinquency rates, 2001-09





Propagation

*...through markets and
internationally*



Elevated mortgage defaults introduced basic questions about mortgage related securities.

- *Riddle*: What are securities backed by mortgage collateral worth?
- *Mystery*: Who holds those securities?
- *Enigma*: How will market participants react?

In this withdrawal from risk-taking . . .

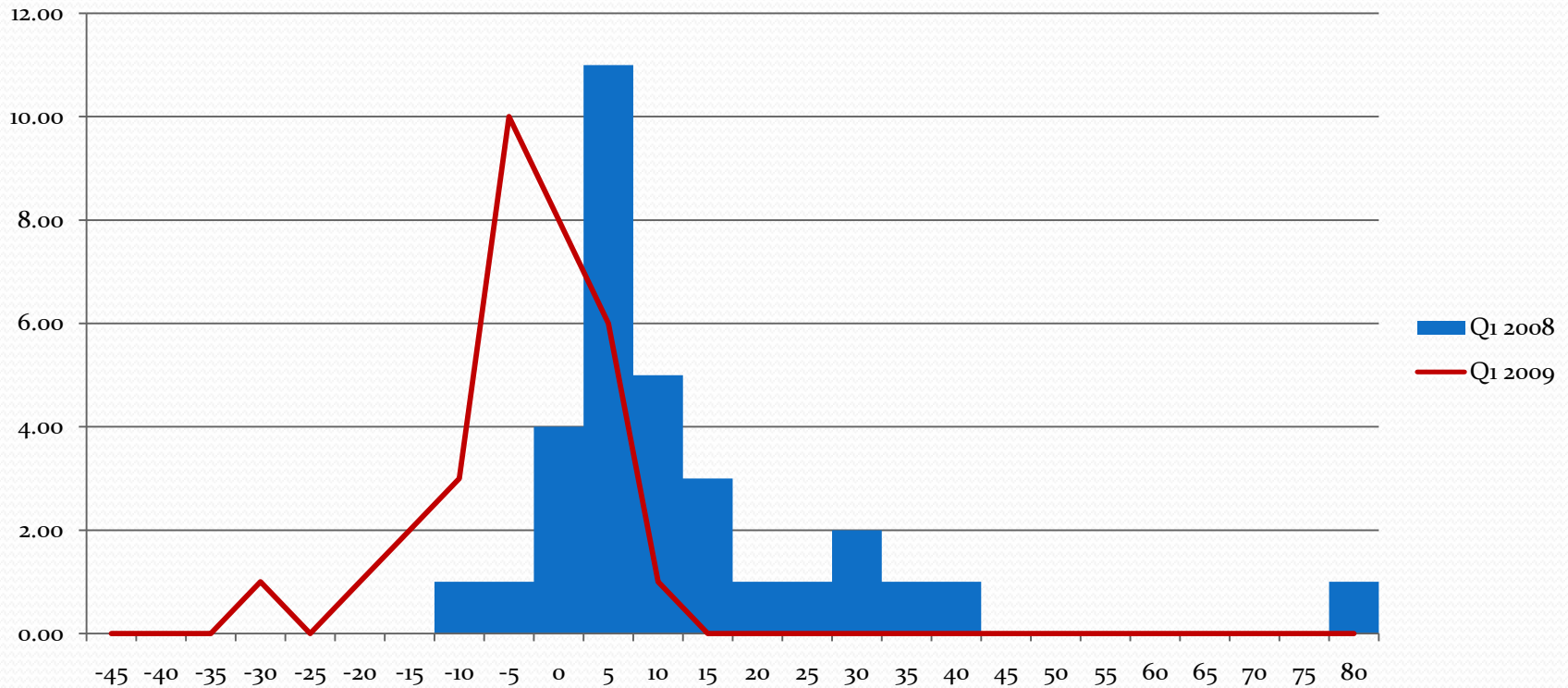
- Financial institutions seek to conserve their capital given
 - Their losses
 - Uncertainty about their own positions
 - Doubts about their counterparties
- Credit become harder to get.
- And firm's individual efforts to repair balance sheets worsens the aggregate situation (a fallacy of composition)

Repeat globally. International propagation from:

- Similar circumstances
- Similar investors
 - Less wealthy
 - More risk averse
 - Prone to extrapolate
- Changed access to markets
 - Closing of trade
 - Crowding out

House prices have softened in many countries

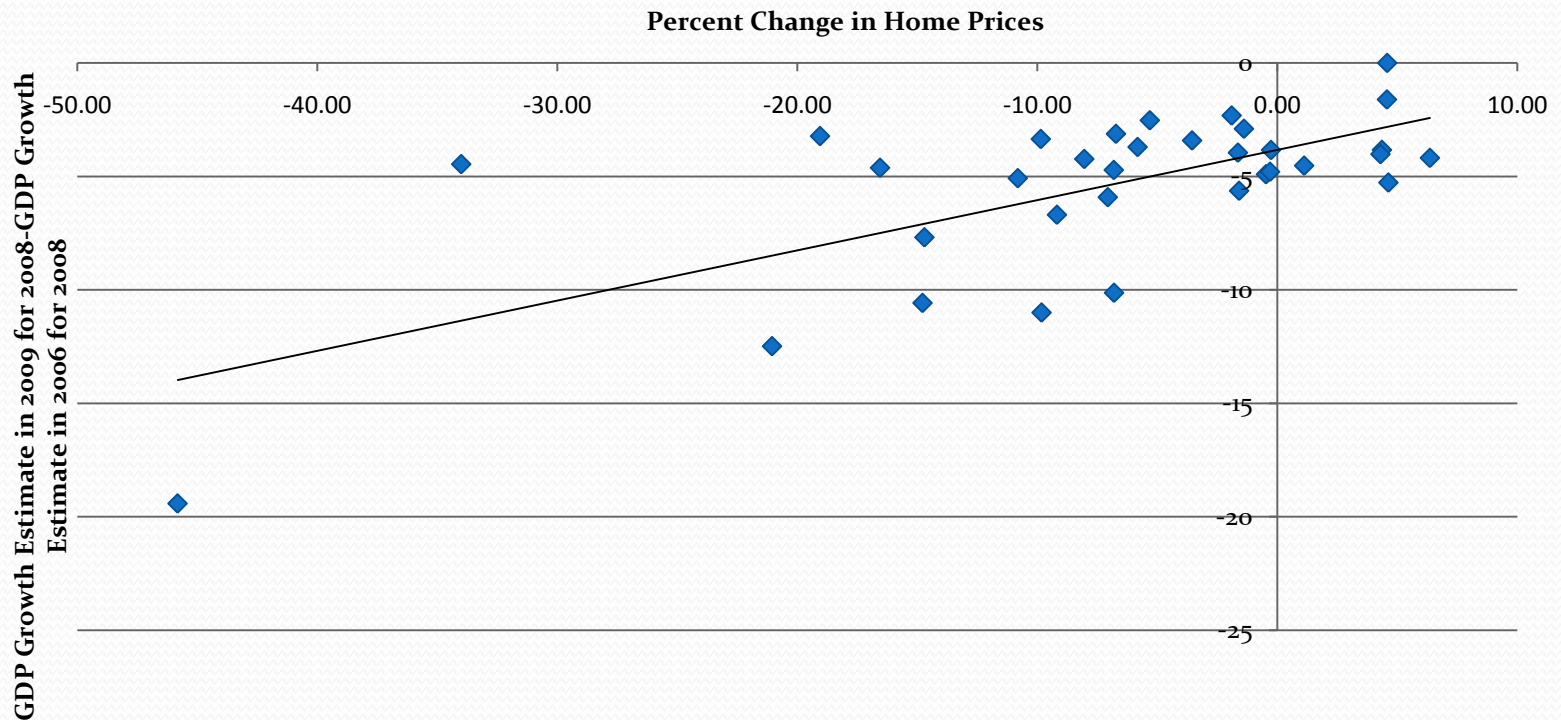
House Price Changes, year over year
Percent



Inflation-indexed prices Source: Global Property Guide, June 2009

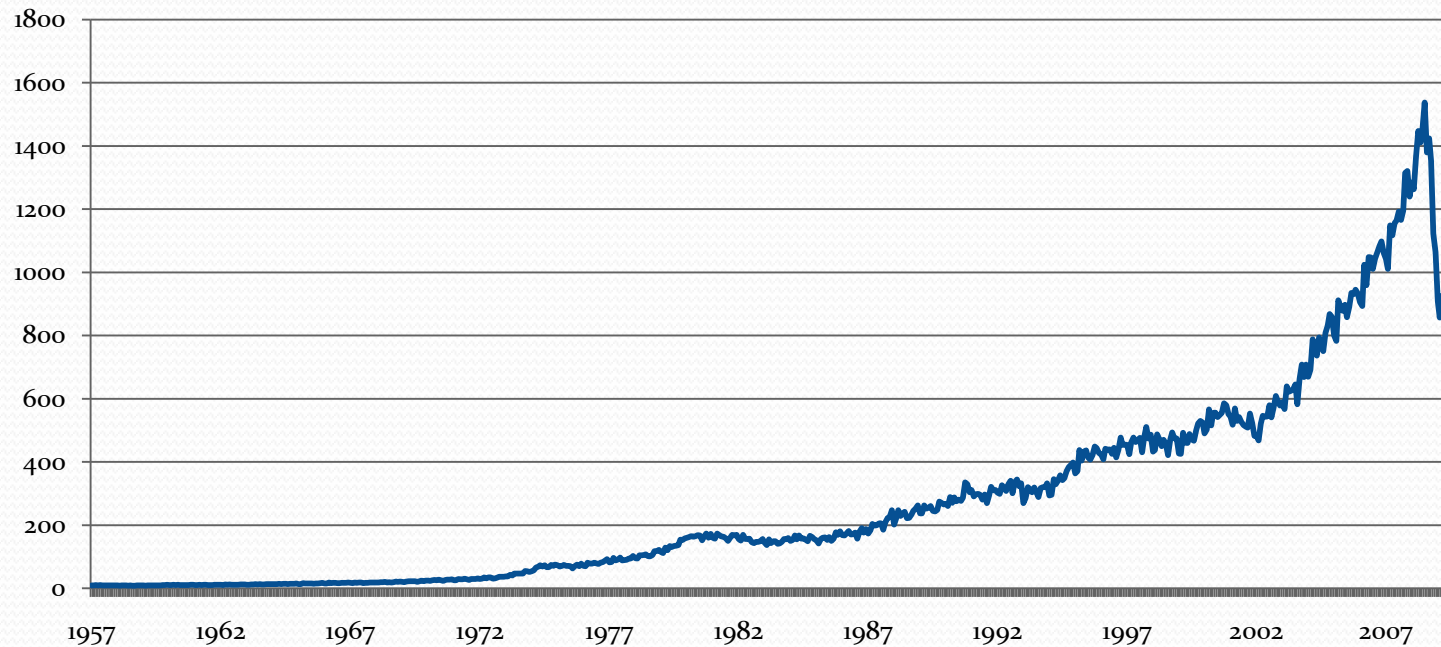
And subtract from growth

Changes to Home Prices and Impact on Growth Estimates



Global Trade Declines

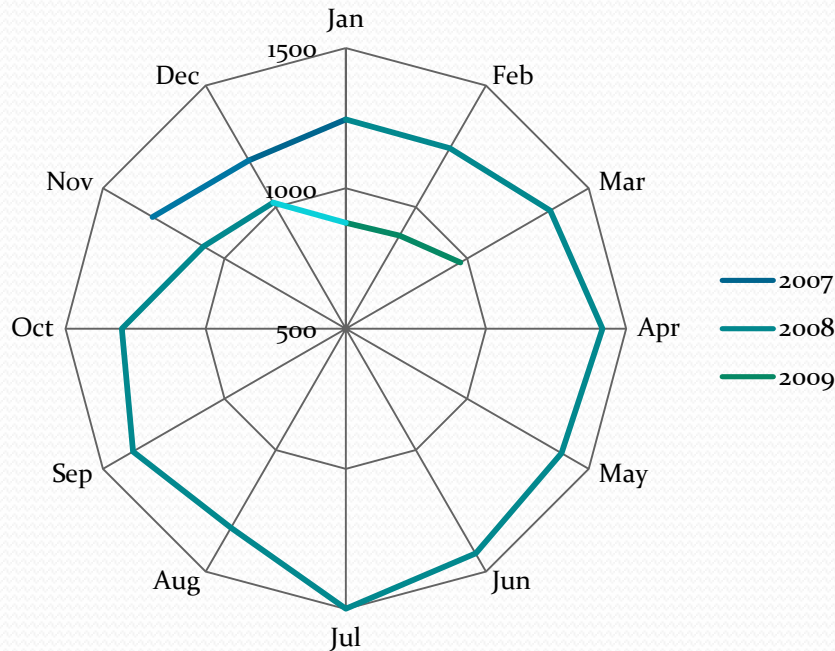
World Imports
Billions of US\$



Source: International Monetary Fund, International Financial Statistics

Look Familiar

Global Exports
Billions of US\$

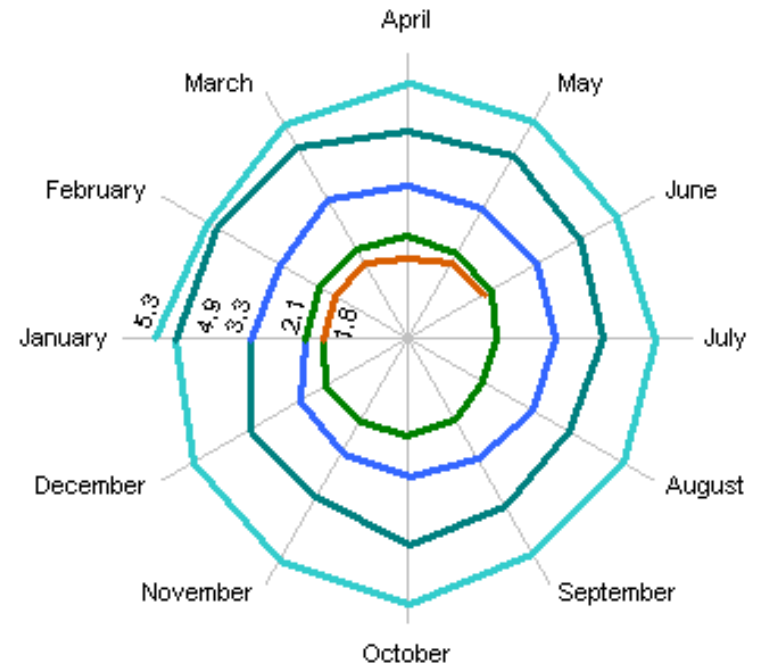


Source: International Monetary Fund, International Financial Statistics

Down the plughole

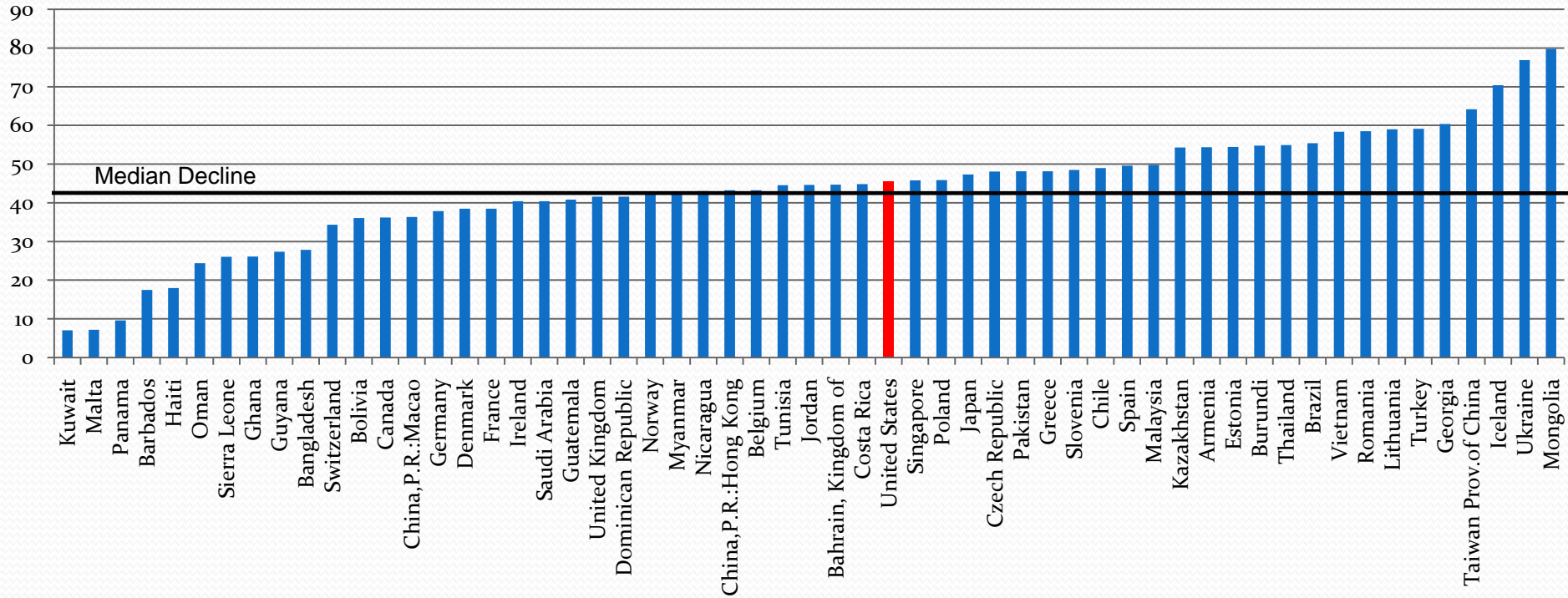
World trade 1929-33, \$B

— 1929 — 1930 — 1931 — 1932 — 1933



League of Nations' World Economic Survey 1932-33

Decline in Imports Percent



Values are Peak to trough, selected countries
Source: IMF International Financial Statistics

Government Debt

(Millions of national currency at face value, unless otherwise noted)

Data as of 2009-Jul-31

And governments are putting increased demands on available resources

	2007	2008
Australia (market value)	367913.0	
% of GDP	33.9	
Euro Area (billions)	5918.2	
% of GDP	66.2	69.2
France (Euro)	1208777.0	1327143.0
% of GDP	63.9	68.1
Germany (billions of Euro)	1576.6	1641.8
% of GDP	65.1	66.0
Italy (billions of Euro)	1599.0	1663.7
% of GDP	103.5	106.0
United Kingdom (billions)	618.4	750.3
% of GDP	44.2	52.0
Canada		
% of GDP		
Mexico (billions)	2497.8	3172.2
% of GDP	22.3	26.2
United States (billions)	5044.6	5816.5
% of GDP	36.5	40.8
India (billions)	2474.1	2840.9
% of GDP	5.2	5.3
Russian Federation (billions)	2402.8	2690.3
% of GDP	7.3	6.5
South Africa	499479.5	525012.0
% of GDP	25.0	23.0



Policy missteps: Rules for Bailouts

Rule 1: Don't do them

- The possibility of government intervention has consequences for the private sector, the government, and the political process
- The private sector
 - Lessens pressure on management to raise capital and address balance sheet problems
 - Lessens counterparty discipline
- The government
 - Opens agencies to political pressure
 - Confuses the public about policy intent
 - Eliminates forever the possibility of serving as an “honest broker”
- The political process
 - Tilts the political playing field toward intervention generally
 - Legitimizes increased supervision and regulation of a wide portion of financial activity

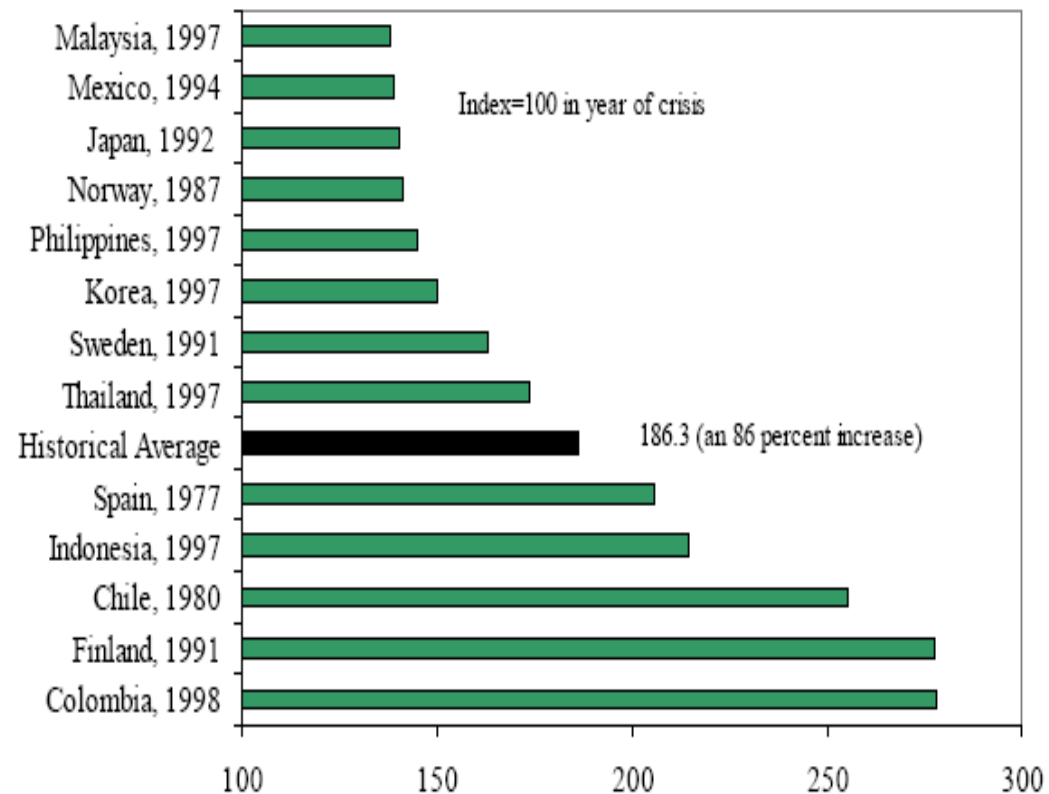
Rule 2: If you break rule one, be consistent

- Policy interventions by the Federal Reserve and the Treasury in 2008
 - were ambiguous as to the scale and scope of the protection offered
- This created incentives for creditors and short sellers to test the limits of intervention
 - So, the fear of debt contagion led policymakers to act in ways that encouraged speculative attacks

Rule 3: If you break rule two, be prepared to spend a lot

- The possibility of intervention leads investors to delay capital investments
- Given a capital hole,
 - If the private sector does not fill it,
 - The government will have to

Public debt three years after a crisis



Source: Reinhart and Rogoff (2009)

Rule 4: Whatever you do, don't add to uncertainty and worsen confidence

- Statements in the Fall (TARP/AIG) and the Spring (stimulus/market repair)
 - Added to uncertainty
 - Damaged confidence
- This is a problem inherent in the brinksmanship of bail-outs
 - Political salesmanship does not always align with economic stewardship





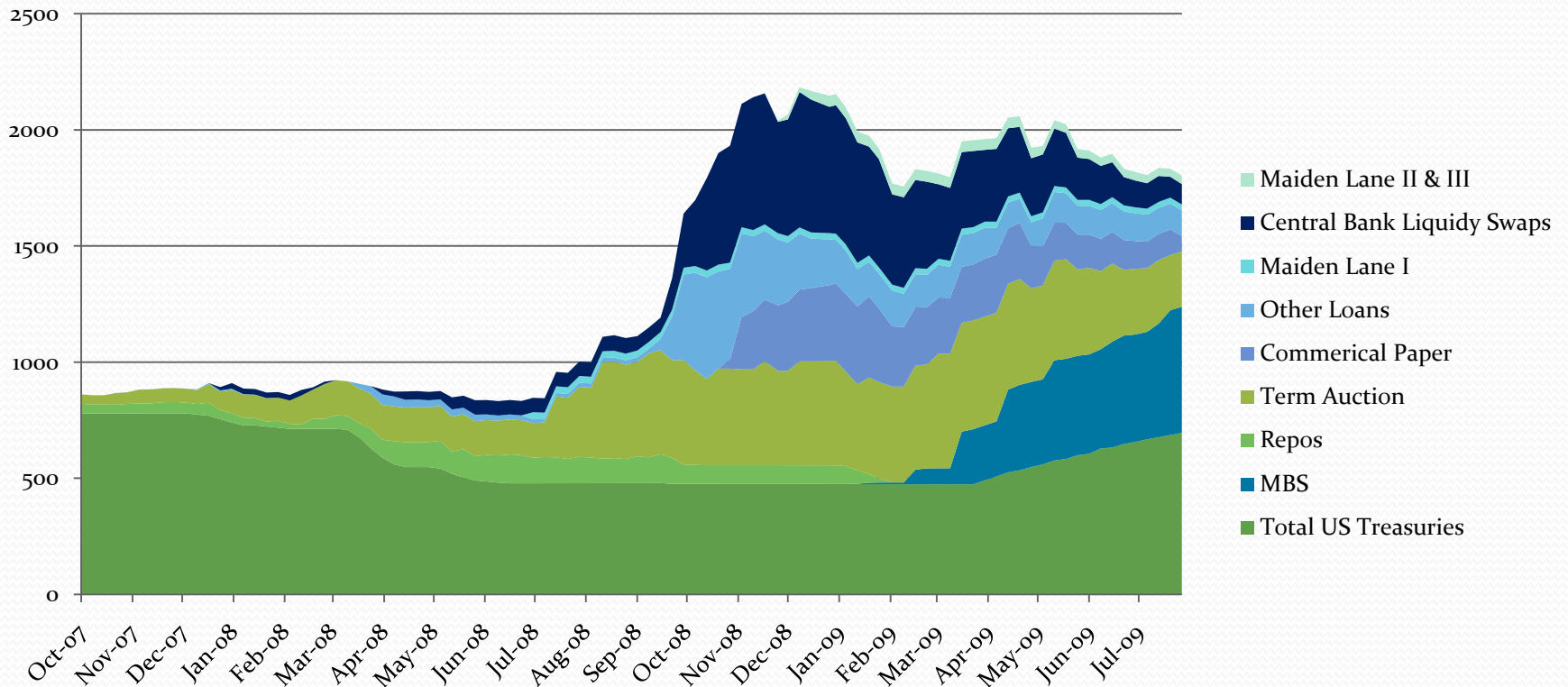
Policy opportunities

Policy Response: We're in Kansas (City) Now

- Bernanke would not be the man who “presided over the next Great Depression”
- Fed has taken new varieties of assets in massive amounts
- Significant International Coordination:
 - Policy rates
 - International Liquidity (Central Bank Swap lines)
 - Deposit Insurance
- The European Central Bank’s resisted reserve accumulation above that required by the policy rate, or quantitative easing

The Fed Intervenes

Federal Reserve Balance Sheet Billions of Dollars



Selected Assets of the Federal Reserve System Source: Board of Governors of the Federal Reserve, H4.1 statistical release: Factors Affecting Reserve Balances

As have other central banks

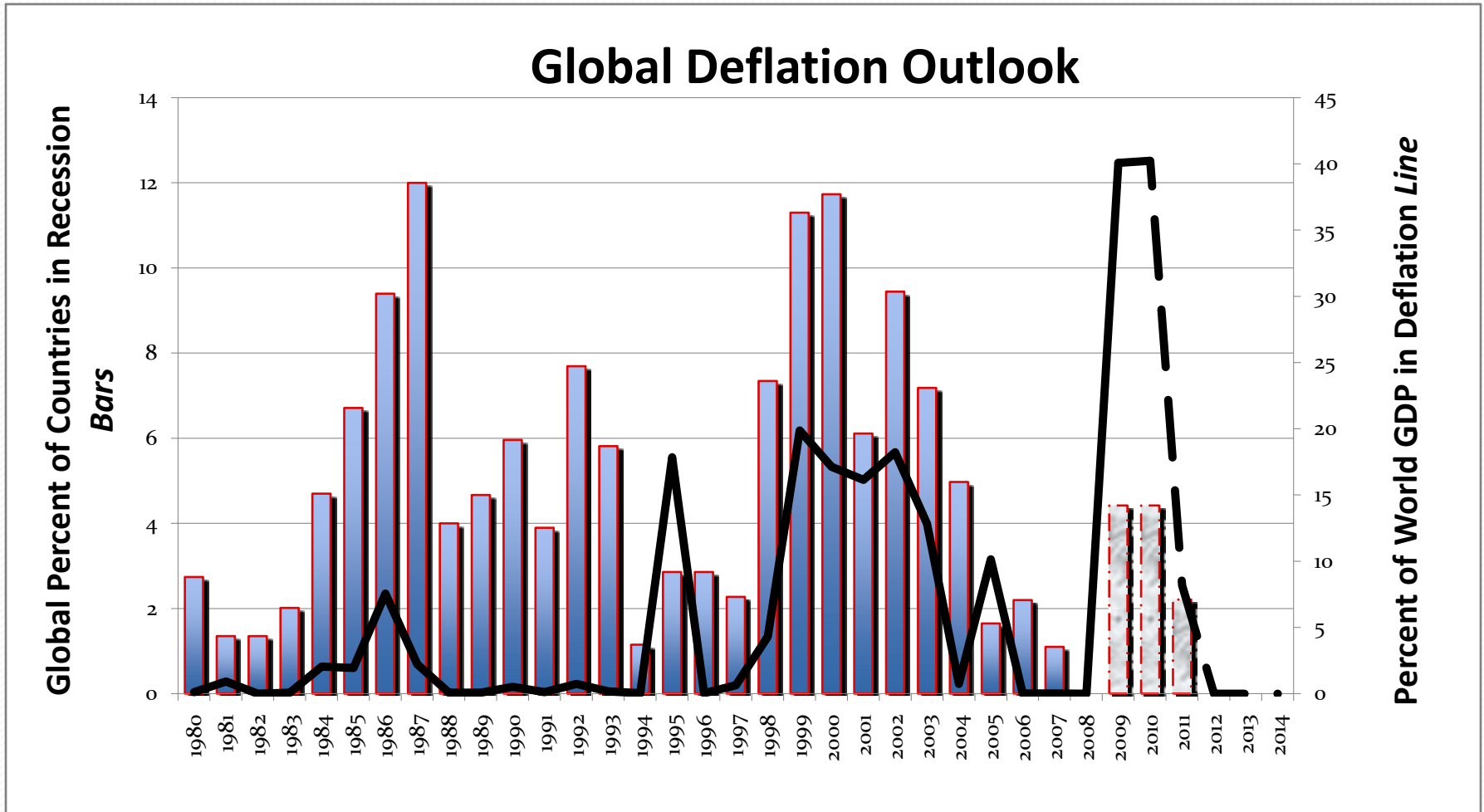
Central Bank Assets

(Percent change over corresponding period of previous year)

Data as of 2009-Jul-31

	2007	2008	2009Q1	2009Q2
Argentina	29	13	9	24
Australia	-14	82	33	3
Brazil	43	37	35	
Canada	10	47		
China, P.R.: Mainland	38	23	16	
Euro Area ¹	32	57	48	
India	32	11	8	
Indonesia	18	4	12	5
Japan	-2	8		
Korea, Republic of	5	2	15	
Mexico	11	34	28	
Russian Federation	48	37	37	
Saudi Arabia	36	45	18	
South Africa	22	36	16	3
Turkey	-5	38	28	17
United Kingdom	-19	147	220	
United States	5	147	132	

Fighting Deflation?



Note: Shaded lines and bars are estimates

Source: International Monetary Fund, International Financial Statistics

Fed will get limits

- The Fed has repeatedly called upon emergency power in the past year, Congress will likely add oversight going forward
- Put mechanisms in place that force good behavior in the future
 - Inflation goal
 - Harder floor on deposit rates
 - Term limit on holding private credit risk purchased with reserves so as to require Treasury funding