A Discussion on Financial Market Turmoil

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Aston University
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Disclaimer:

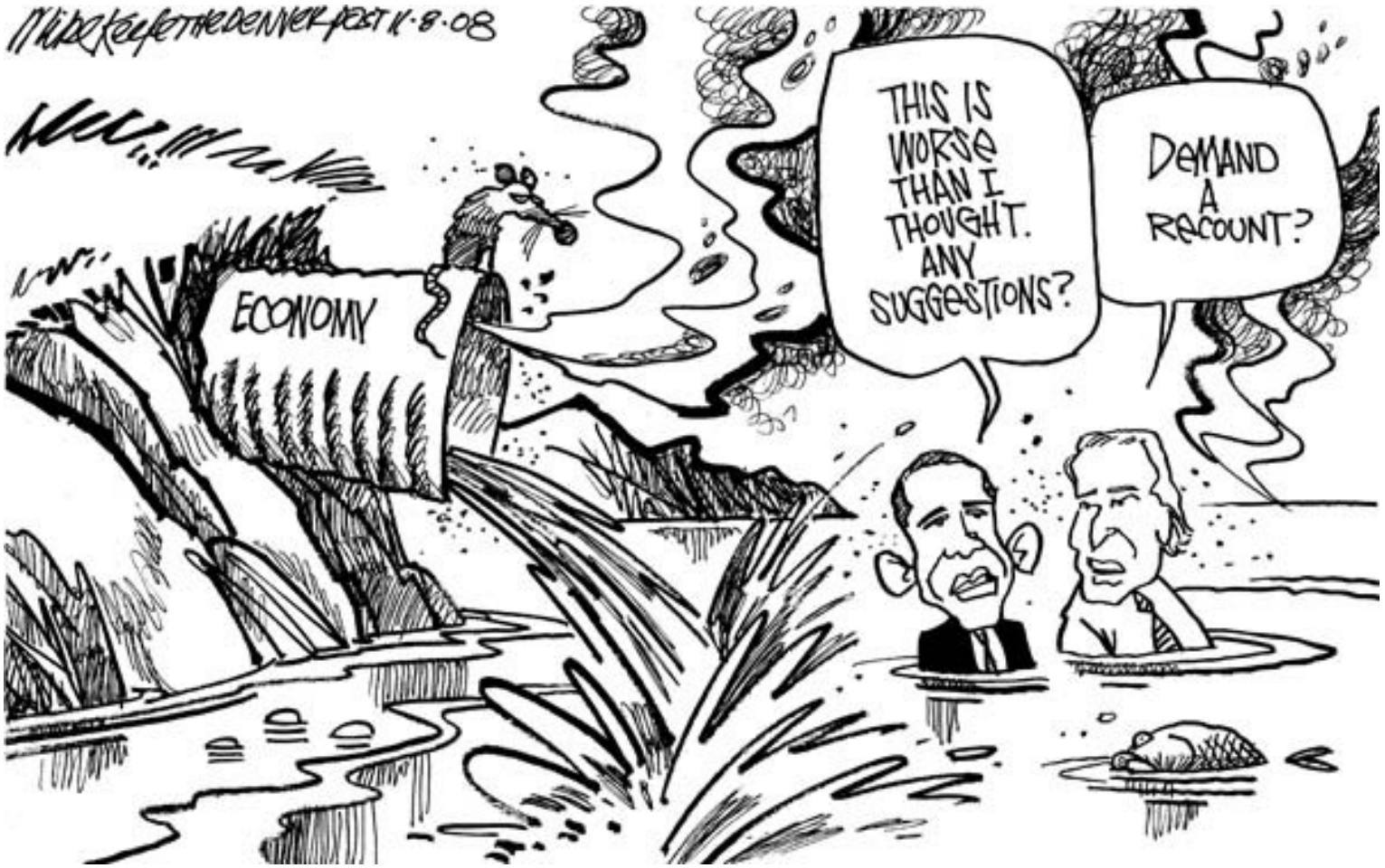
The views expressed are mine and do not necessarily represent the views of the Federal Reserve Bank of St. Louis or the Board of Governors of the Federal Reserve

Outline

1. Picture of “where we are”
2. How did we get here?
3. Mortgage Finance and financial engineering
4. Time line of events
5. Federal Reserve actions
6. Economic Outlook

Financial Market Deterioration

Win?



Source: Denver Post, 7 November 2008

Definitions

- Credit Crunch
  - Curtailment of credit supply in response to decline in value of bank capital.
- Credit Squeeze
  - Shortage of liquidity in money markets and effective closure of certain capital markets affecting credit availability *between banks*.
  - Decline in terms and availability of credit for *consumers and entrepreneurs*.

Credit Squeeze

- Disorder in financial markets as banks seek to determine true value of assets not being actively traded.
- Uncertainty among financial institutions aware of the need for liquidity but unwilling to offer it except under terms well above the risk-free rate.

Past Examples?

- Emerging markets crisis 1997-98
- LTCM 1998
- Dot-com boom-and-bust 2000
- International mortgage finance
  - International investors
  - Mortgage instruments packaged and re-packaged, sold and re-sold

Current Crisis

- Started with subprime mortgages
- Escalated due to derivatives
- Cascaded due to credit insurance (CDS)
  - CDS affected many types of loans and investments
  - Crisis of confidence
- Affected both the regulated and unregulated banking systems

Consequences

- Loss of confidence
  - Inability to assess counterparty risk
  - Inability to borrow leads to reduced spending and lending
  - Term funding unavailable in interbank lending market
  - Withdrawals from money market funds disrupt commercial paper market (shadow banking system)
- Affect economies worldwide

Two Inviolate Rules of Investing

1. "Sophisticated investors never buy instruments they do not understand."

2. "No investment consistently pays a yield significantly above the risk-free rate while having little or no risk."

> Investors worldwide violated both rules!

Two Other Rules of Investing

1. "A Fool and His Money are Soon Parted."

   -- attr. Thomas Tusser, English, 1524-1580

2. "There's a sucker born every minute."

   -- attr. (falsely) P.T. Barnum, American, 1810-1891
   (author of *The Art of Getting Money, 1880)*

Bernanke as Prognosticator

- …the experience of the United States in recent years is not unique. A number of key industrial countries have seen their current accounts move substantially toward deficit since 1996, including France, Italy, Spain, Australia, and the United Kingdom. The principal exceptions to this trend among the major industrial countries are Germany and Japan, both of which saw substantial increases in their current account balances between 1996 and 2004. **A key difference between the two groups of countries is that the countries whose current accounts have moved toward deficit have generally experienced substantial housing appreciation and increases in household wealth, while Germany and Japan--whose economies have been growing slowly despite very low interest rates--have not.**

- The evident link between rising household wealth and a tendency for the current account to shift toward deficit is consistent with the mechanism that I have described today.

-- "**The Global Saving Glut and the U.S. Current Account Deficit,**"
St Louis MO, April 14, 2005

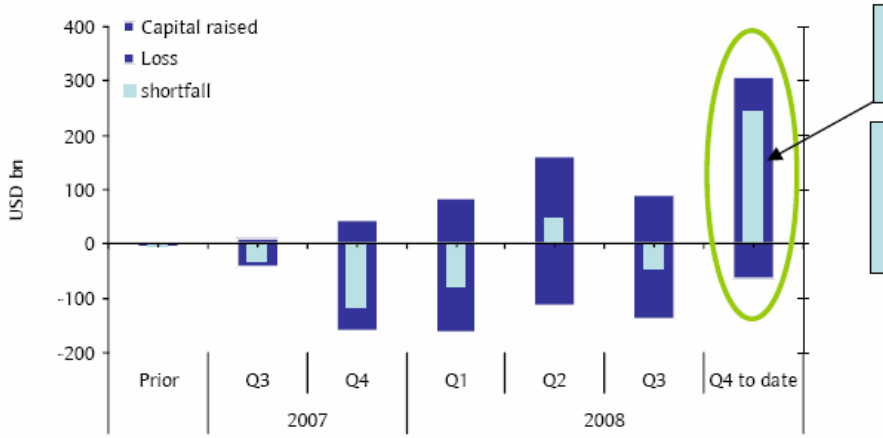
Why?

[I]nterest rates…were considerably below the levels to which most investors had become accustomed in their working lives. Dissatisfaction with these rates gave birth to the "search for yield." This desire for higher yields could not be met by traditional investment opportunities. So it led to a demand for innovative, and inevitably riskier, financial instruments and for greater leverage. And the financial sector responded to the challenge by providing ever more sophisticated ways of increasing yields by taking more risk.

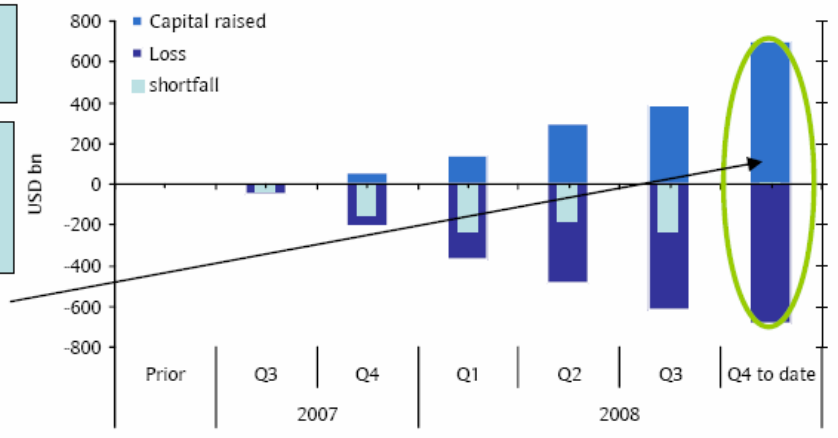
King, Mervyn. Speech by the Governor of the Bank of England at the Northern Ireland Chamber of Commerce and Industry, Belfast, October 2007, pp. 2-3; www.bankofengland.co.uk/publications/speeches/2007/speech324.pdf.

Worldwide, Banks Are About Even
~ US$700B in Writedowns
> Where Is Bottom?

Bank writedowns and capital raising on quarterly basis



Cumulatively, capital raised has now matched writedowns



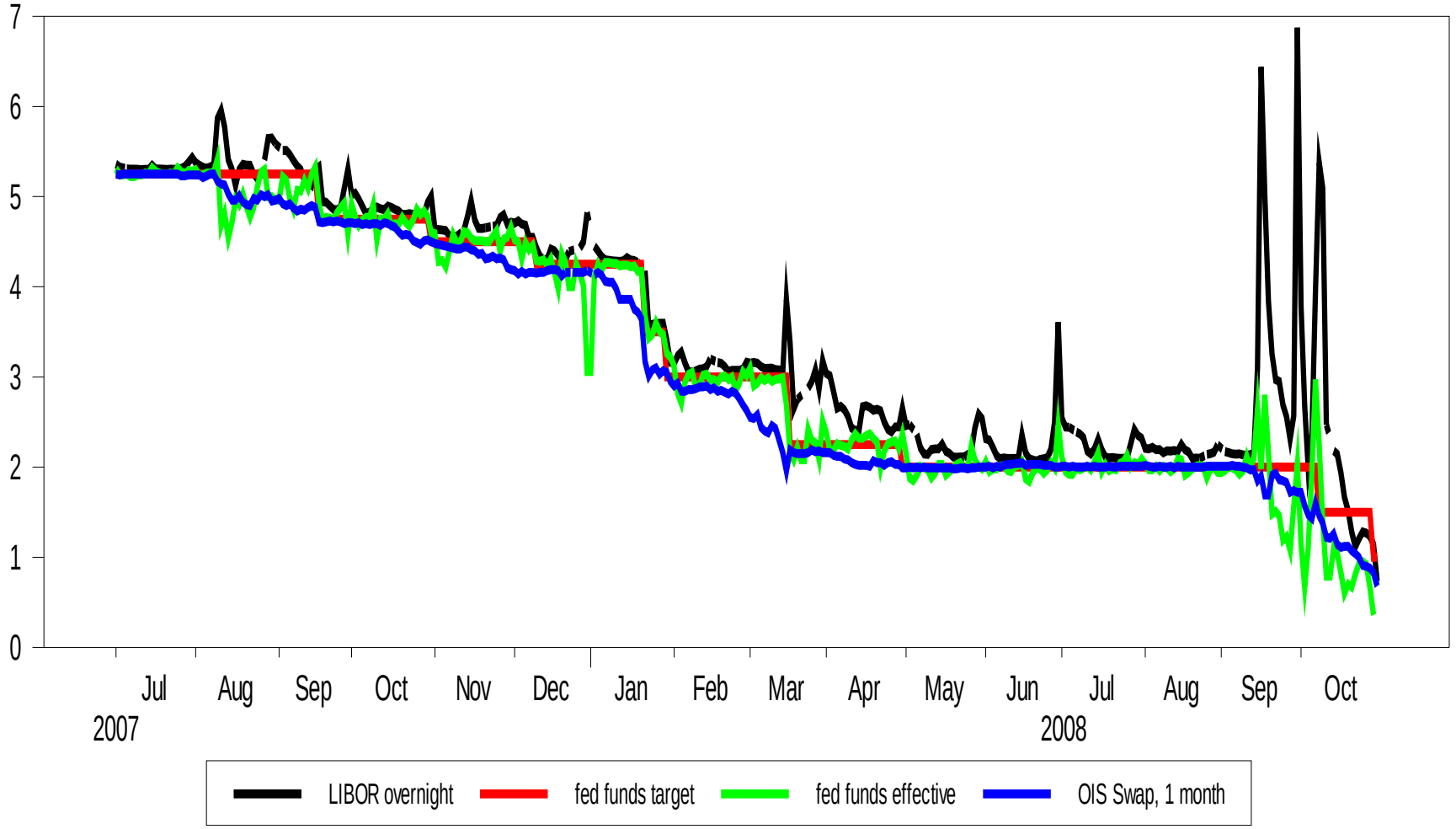
Source: Barclays Capital

Excess Focus on Banks?

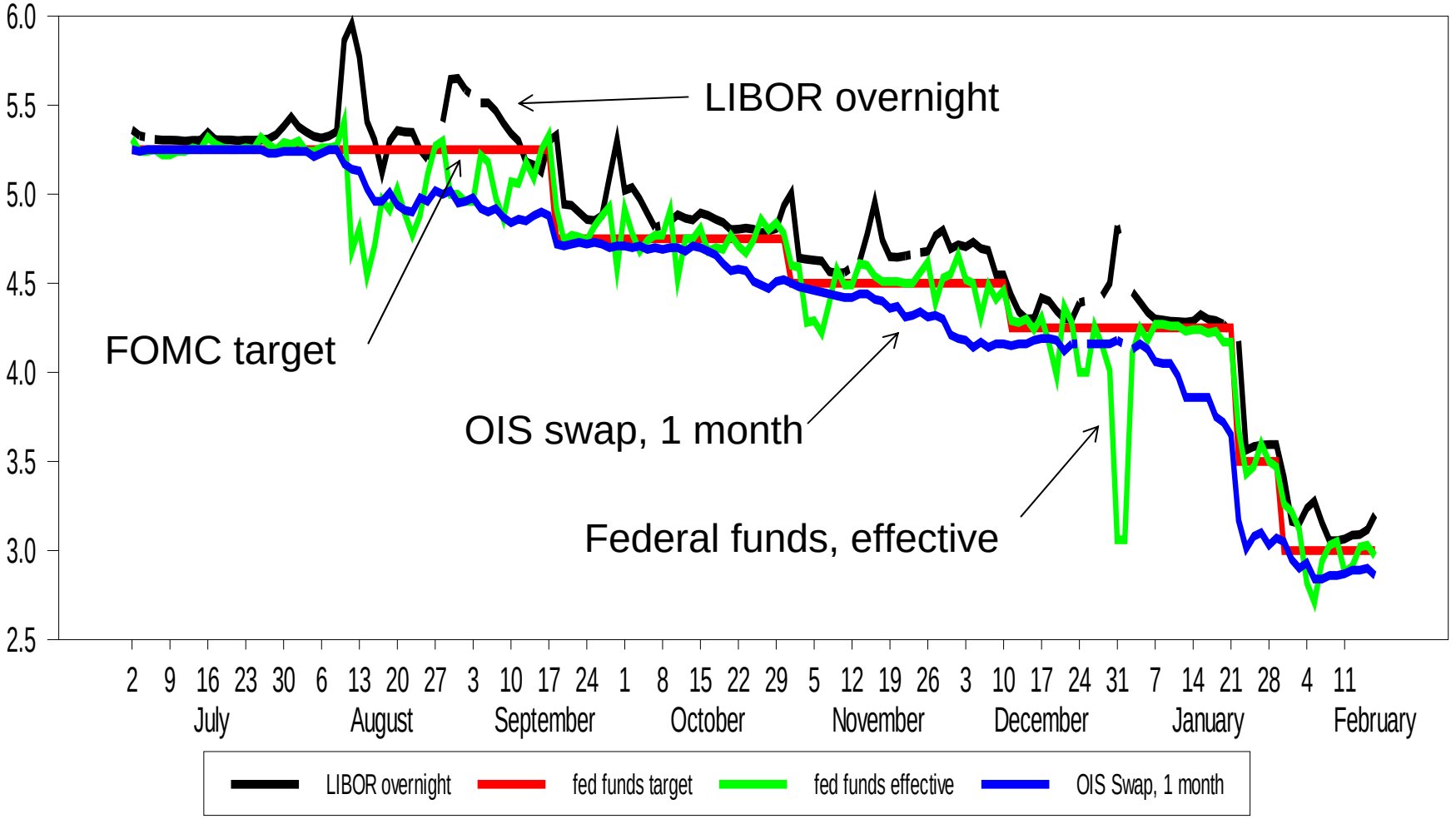
The Rescue Plan

Source: Chattanoga (TN) Times Free Press

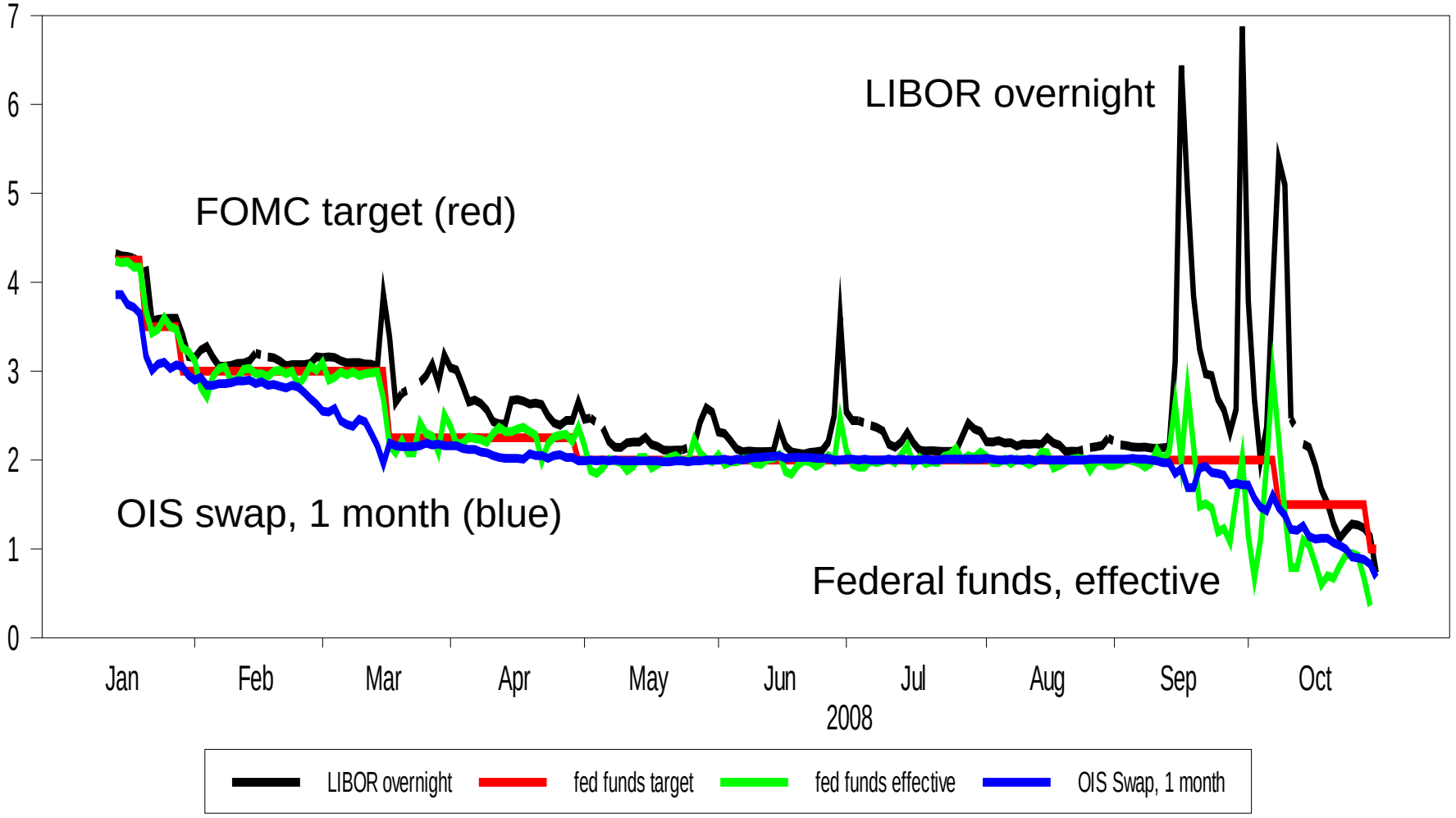
2007-2008 Short-Term Market Rates



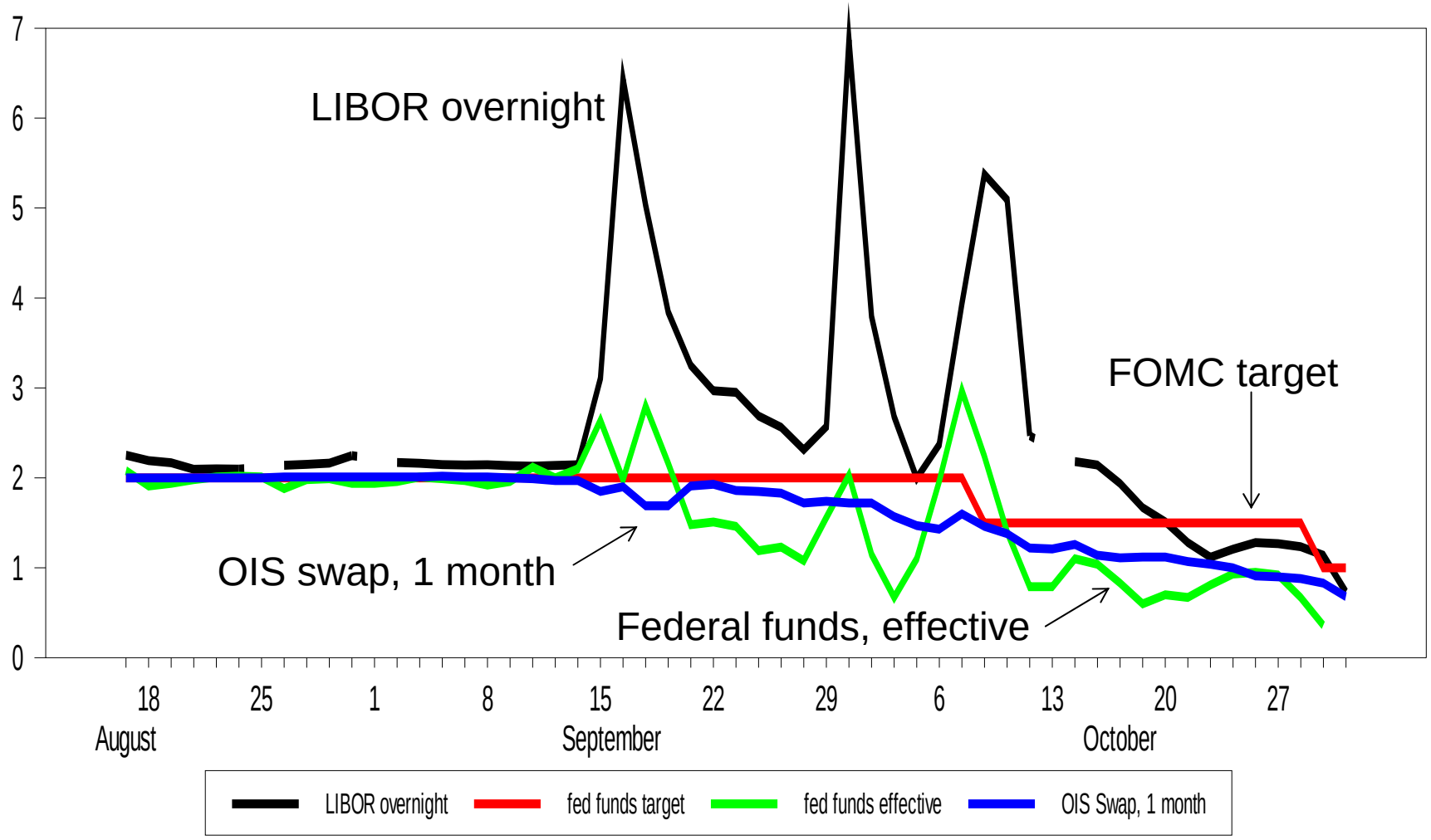
2007 Short-Term Market Rates



2008 Short-Term Market Rates

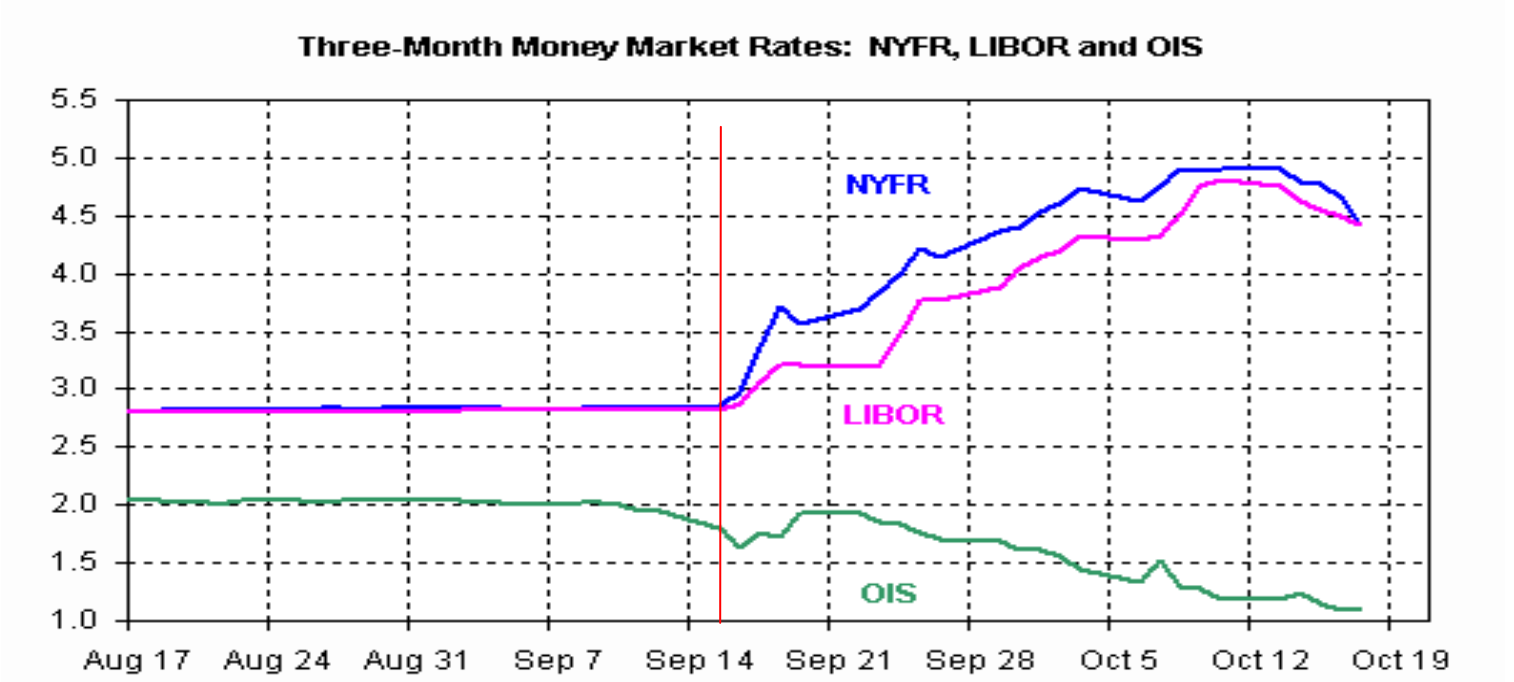


2008 Short-Term Market Rates



Lehman Bros failure scared markets

- Now, any counterparty might be allowed to fail
- Signal that American government will not save all firms
- American banks suffered losses on Lehman stock, bonds
- Disruptions to London clearing for hedge funds
- Difficulties with return of collateral for US customers
- Disruption to international interest rate swaps



Source: R.H. Wrightson and Company

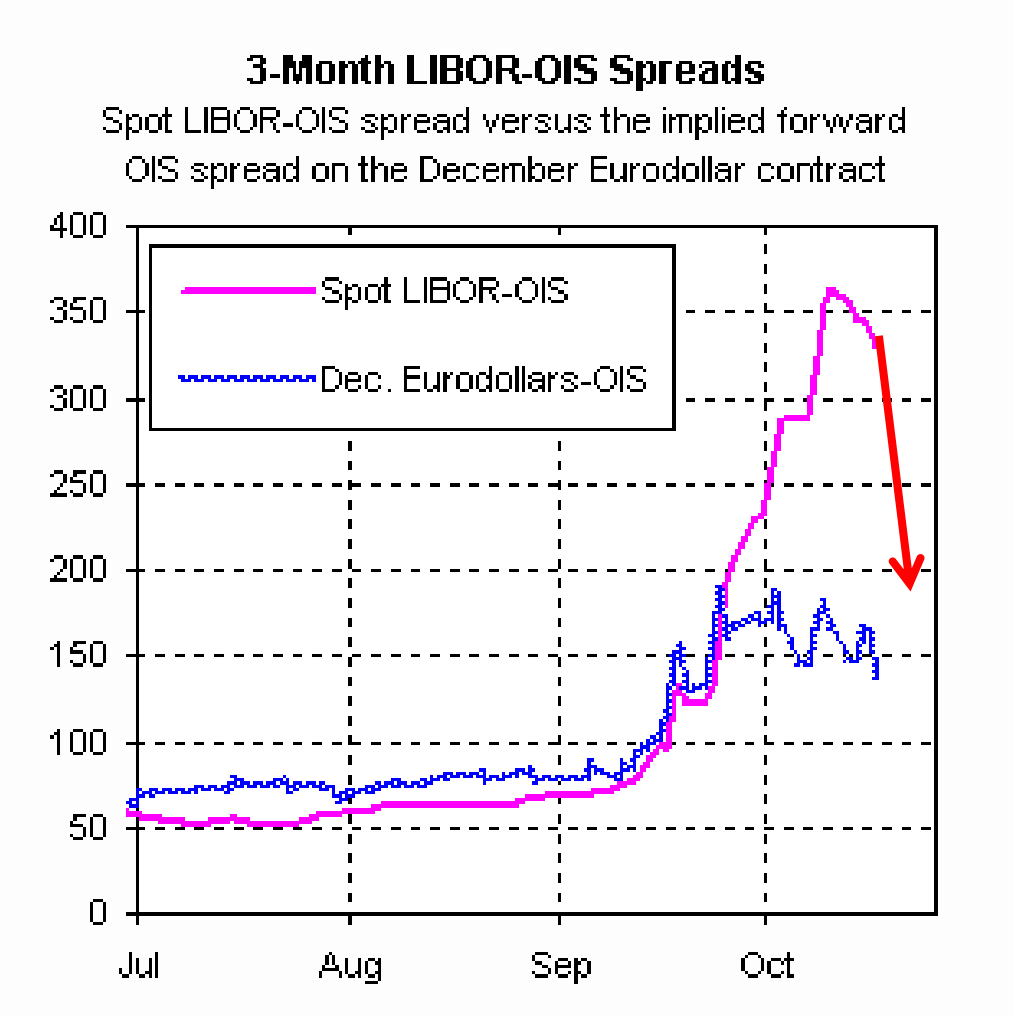
Risk Premia have decreased recently

LIBOR Spot vs Overnight Interest Swap to fed funds:

Oct 10: 366 b.p. (peak)

Nov 10: 170 b.p. (elevated)

Is the worst behind us?



Source: R.H. Wrightson and Company

Causes

- Correlation is not causality
- Movements in an endogenous variable cannot be “explained” by movements in other endogenous variables
- The world is stochastic (God does play dice with the universe)
- *Shocks* to the equations that determine endogenous variables *are* exogenous – and *are* potential explanatory variables.

Causes

- A credit boom
  - Underpricing of risk
  - Excessive leverage
  - Increasing reliance on complex and opaque financial instruments
- Decrease in US house prices
- “Greed”
- “Deregulation”

Causes

"Greed" and Deregulation (Alan Greenspan)

- 2000: Congress removes financial derivatives from CFTC oversight
- 2004: SEC reduces investment-bank capital requirements for derivatives

Source: Denver Post, 25 October 2008

Uncertainty

The idea that the state of the universe at one time determines the state at all other times, has been a central tenet of science. It implies that we can predict the future, in principle at least. In practice, however, our ability to predict the future is severely limited by the complexity of the equations, and the fact that they often have a property called chaos. As those who have seen Jurassic Park will know, this means a tiny disturbance in one place, can cause a major change in another. A butterfly flapping its wings can cause rain in Central Park, New York. The trouble is, it is not repeatable. The next time the butterfly flaps its wings, a host of other things will be different.

-- Professor Steven Hawking

Mortgage Terminology 0

Loan Types

- prior to Great Depression, mostly fixed rate, short-term loans
- "Balloon payment" after 3 to 5 years
- Obtain new mortgage or pay in full
- Foreclosures during Great Depression

Reform During 1930s

- only long-term (30 year), level payment, fixed rate, fully amortized loans permitted

Reform During 1970s

- Alternative Mortgage Transactions Parity Act (1982) [federal law] legalized adjustable rate and other mortgages
- Created complex interaction between federal and state rules regarding prepayment options and penalties

Mortgage Terminology I

"Prime" Mortgages usually were:

- max 80% loan to value
- less than Congressional limit in size for purchase by GSEs
- monthly service (principal, taxes, insurance) < 28% income
- all monthly installment payments < 35% income (approx)
- loans accepted by federal mortgage GSEs: FNMA and FHLMC for conversion into mortgage backed securities

Subprime Mortgages: All Others, including "Alt-A"

- have always existed in small quantities
- illiquid, not generally marketable, held in-portfolio by lender
- 2000s innovations:
    - decisions based on credit scoring
    - slice/dice/securitize, spread/reduce risk via derivatives

Mortgage Terminology II

Mortgage-Backed Securities

- GSEs (FNMA, FHLMC)
  - Federal National Mortgage Association (Fannie Mae)
  - Federal Home Loan Mortgage Association (Freddie Mac)
- federal government directly (GNMA, FHA, VA)
  - Government National Mortgage Association
  - Federal Housing Administration
  - Veterans Administration
- “Private label” mortgage-backed securities
  - issued by investment banks
  - no federal guarantee

=> Pools of MBSs are claims against legal trusts (SPVs), the entities that actually hold the mortgages.

Mortgage Terminology III

Tranches

- Pool/combine MBS into new SPVs
- Sell claims to cash flows
  - 1st claim: “super senior”
  - middle: “mezzaine”
  - last: “basement”, will be required to absorb initial losses

Pricing tranches is complex due to embedded refinancing option in US mortgages.

Traditionally based on a set of MBS with common underlying mortgage interest rate.

Mortgage Terminology IV

Derivatives

- CDOs, CDOs squared, CDOs cubed
  - Collateralized debt obligations
  - Invented during 1980s for corporate bonds
  - Generally SPV holding MBS and issuing CDOs
  - Can be a SPV holding CDOs and issuing CDOs or a SPV holding CDSs and issuing CDOs
  - By pooling a variety of MBS => diversify risk!
    - diversify geographic risk
    - diversity default risk
    - diversify prepayment risk
  - Create and sell tranches – e.g., super-senior CDOs

It's Magic! Risk has been made to disappear…

Financial Engineering I

General Theorem of Financial Engineering
(Myron Scholes, b. 1941, 1997 Nobel Prize in Economics)

Create new financial instruments that better match both the needs and preferences of the seller/borrower and of the buyer/lender.

Intermediation: Sell the buyer what they wish, and sell the lender what they wish. Make money in the middle.

*(Warning: I made up these words to summarize a lecture given by Scholes. These are **not** quotes.)*

Financial Engineering II

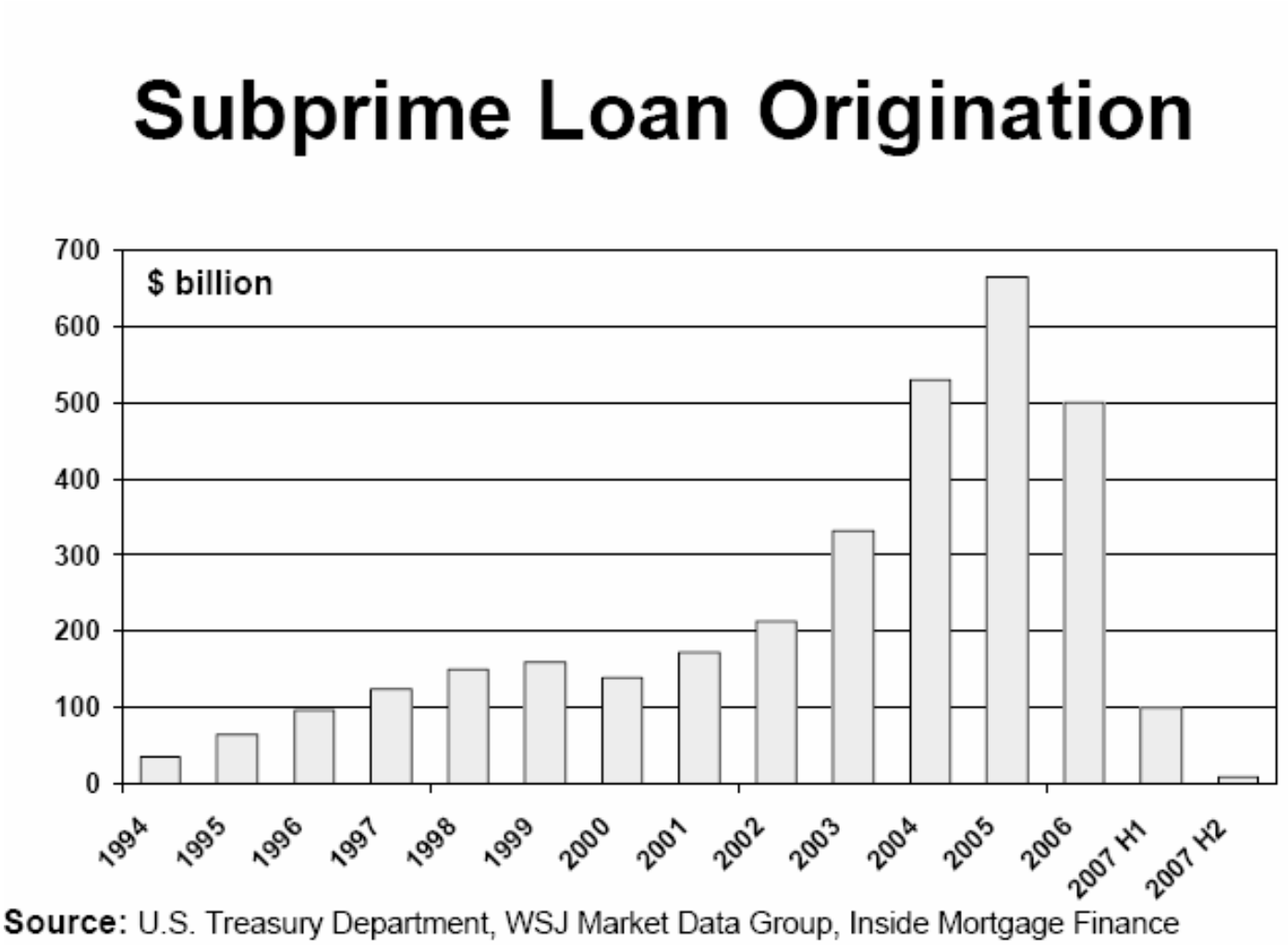
Insurance

- "*Risk" is a commodity that may be priced*
- Treat 'risk' as an asset class
- Risk is a commodity that can be bought and sold

- CDS
  - Credit default swaps
  - Extensive use of CDS spread risk widely in financial markets, as investors bought insurance against default
  - **Not just mortgages!**
  - Became the backbone of modern large-scale finance

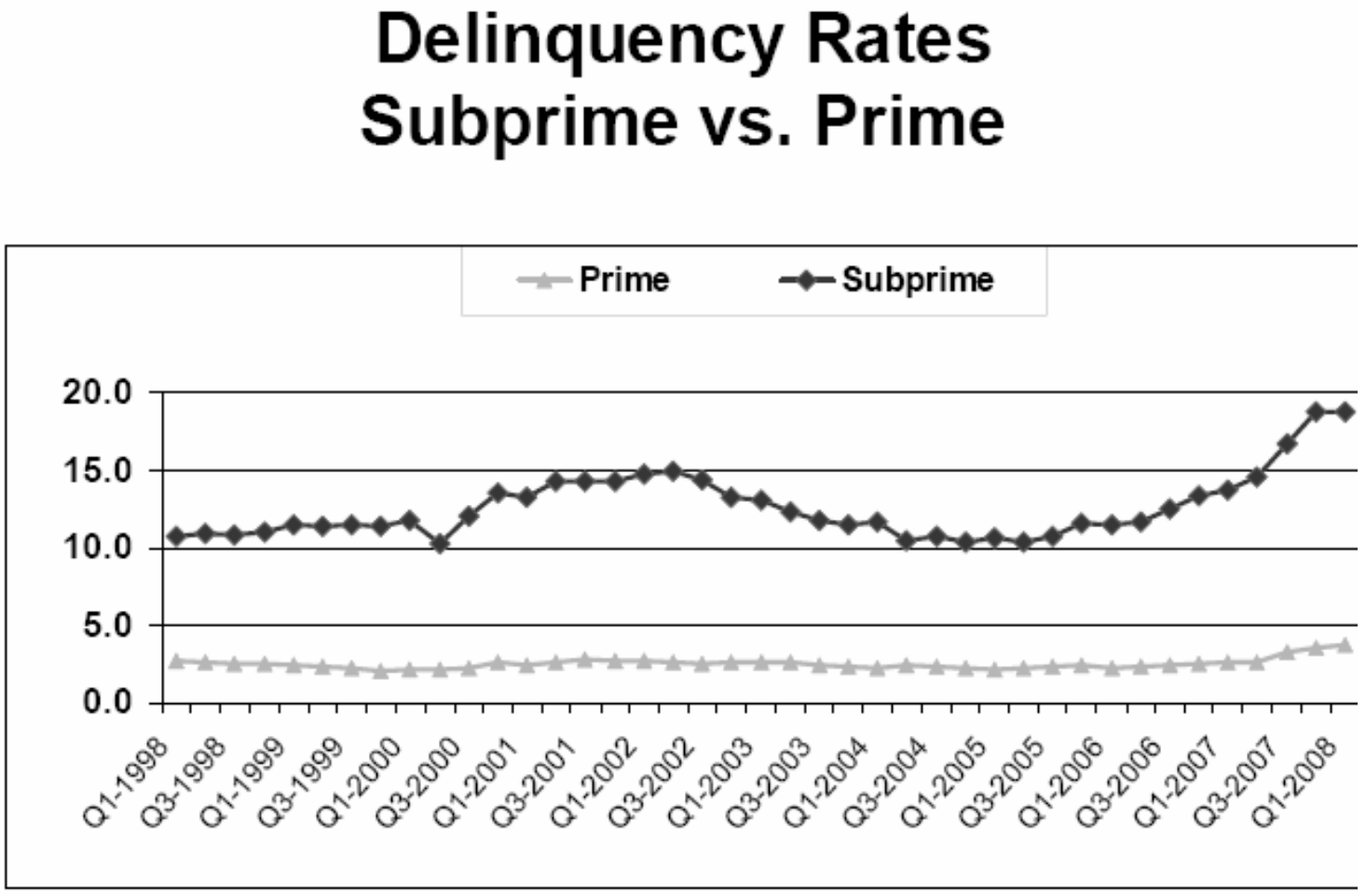
It's Magic! Risk has been made to disappear…

Mortgage Lending



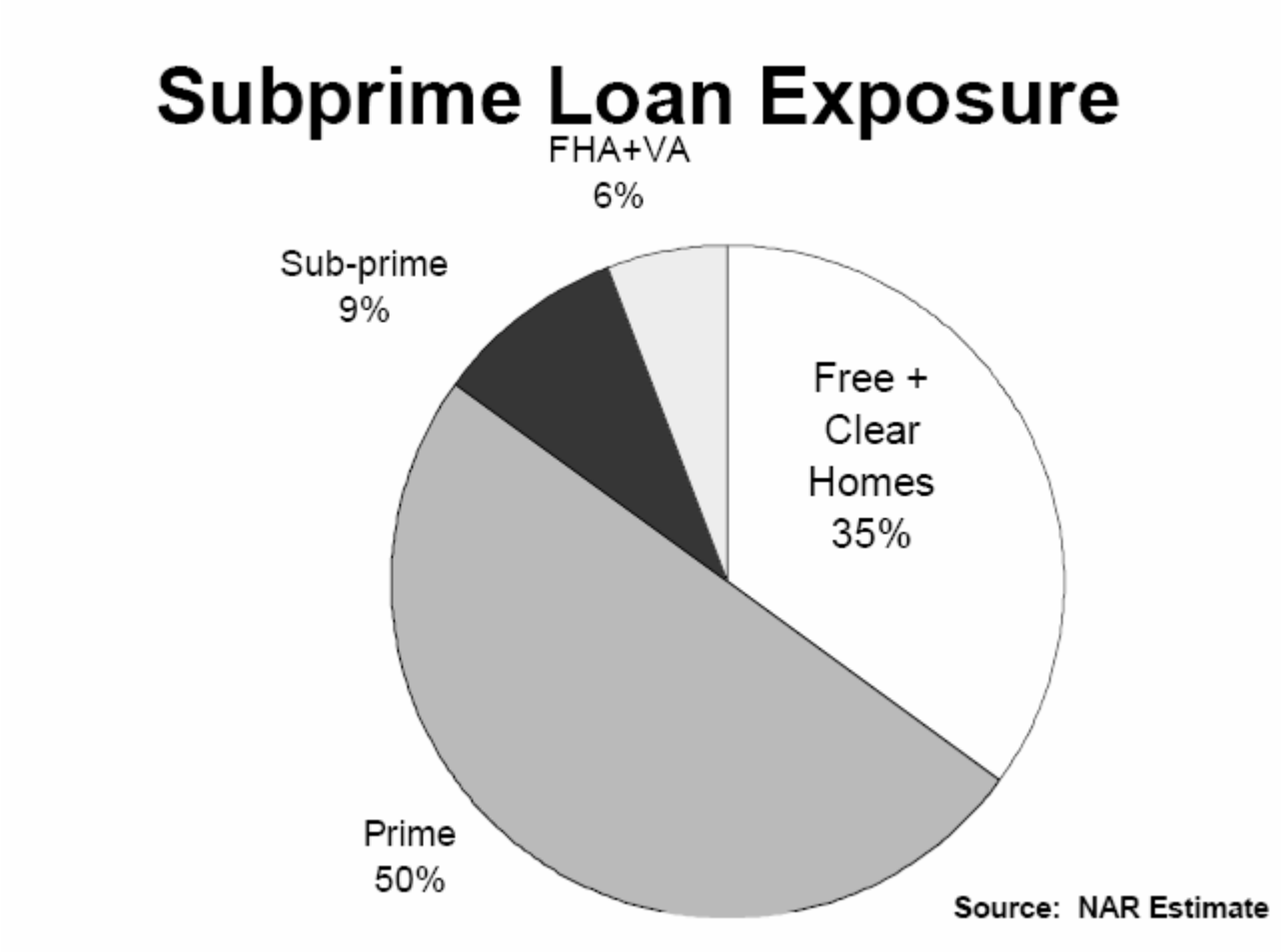
Source: U.S. Treasury Department, WSJ Market Data Group, Inside Mortgage Finance

Subprime Delinquency Rates 10% to 20%



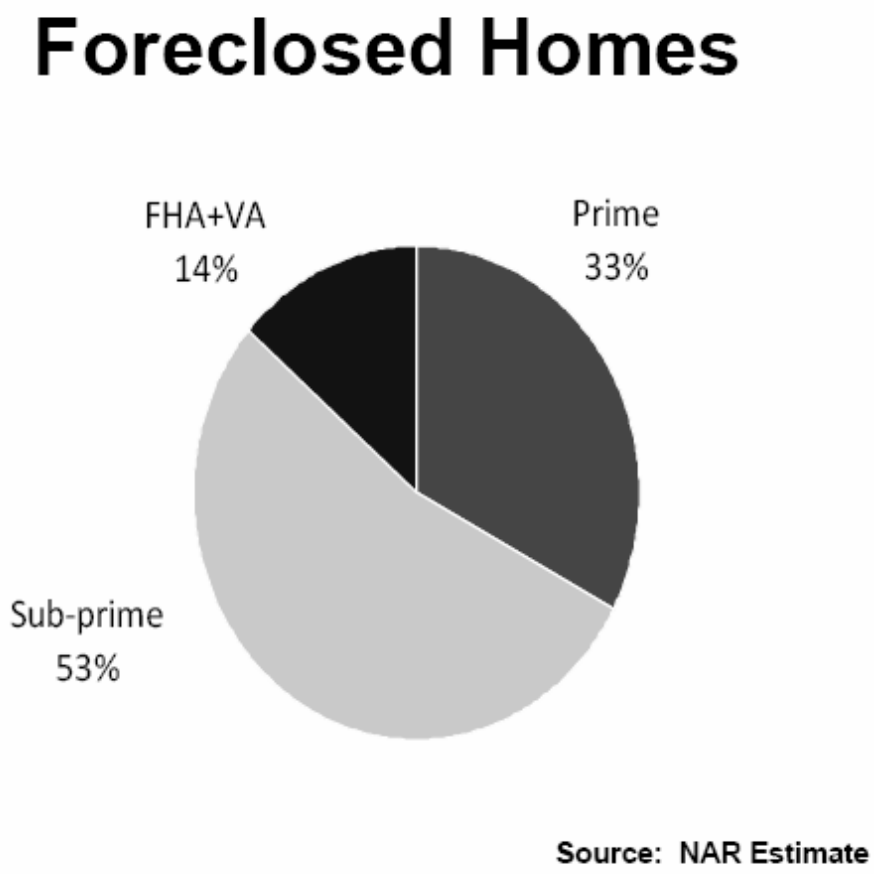
Data: Mortgage Bankers Association

Subprime Never More than 10% of Mortgages



Source: Mortgage Bankers Association

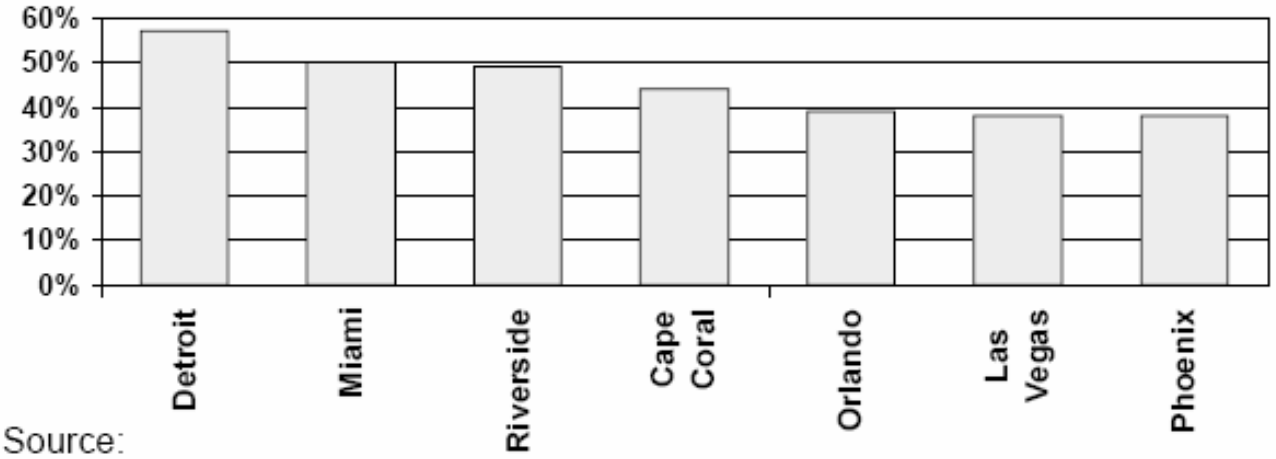
House Prices Ceased Rising



Source: Mortgage Bankers Association

A Few Markets Were Bubbles

High Subprime Mortgage Originations

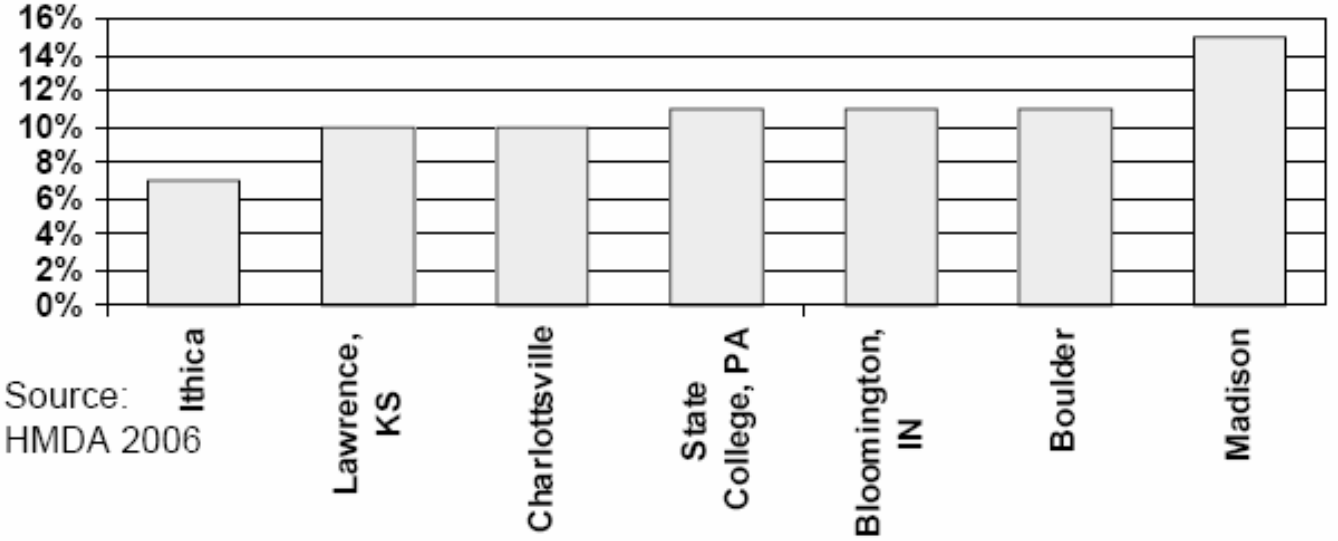


Source:
HMDA 2006

These markets are experiencing double-digit price declines

Many Markets Were Not…

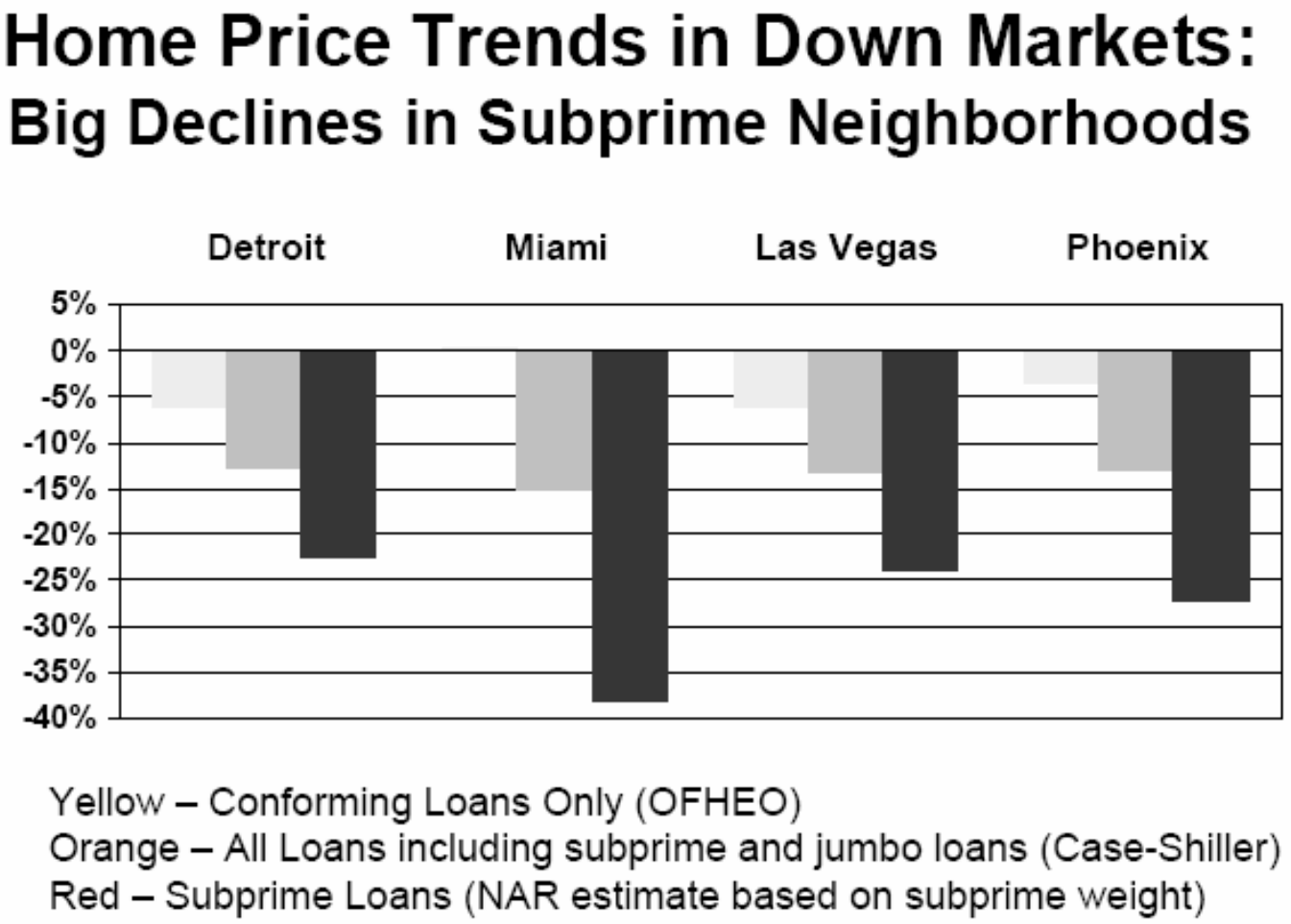
Low Subprime Mortgages



These markets are experiencing respectable price gains

Source: Mortgage Bankers Association

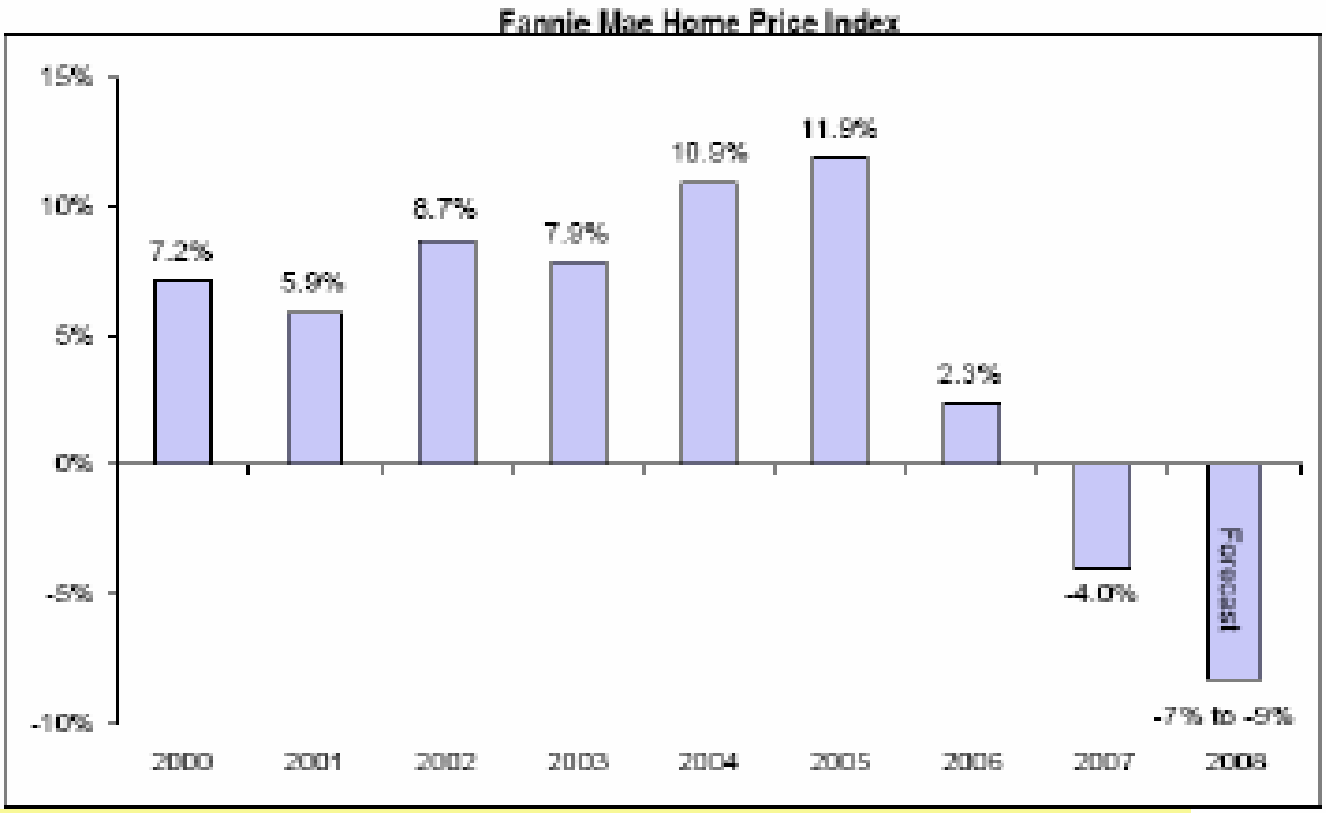
House Prices Ceased Rising



Source: Mortgage Bankers Association

House Prices Ceased Rising

Home Price Growth Rates in the U.S.

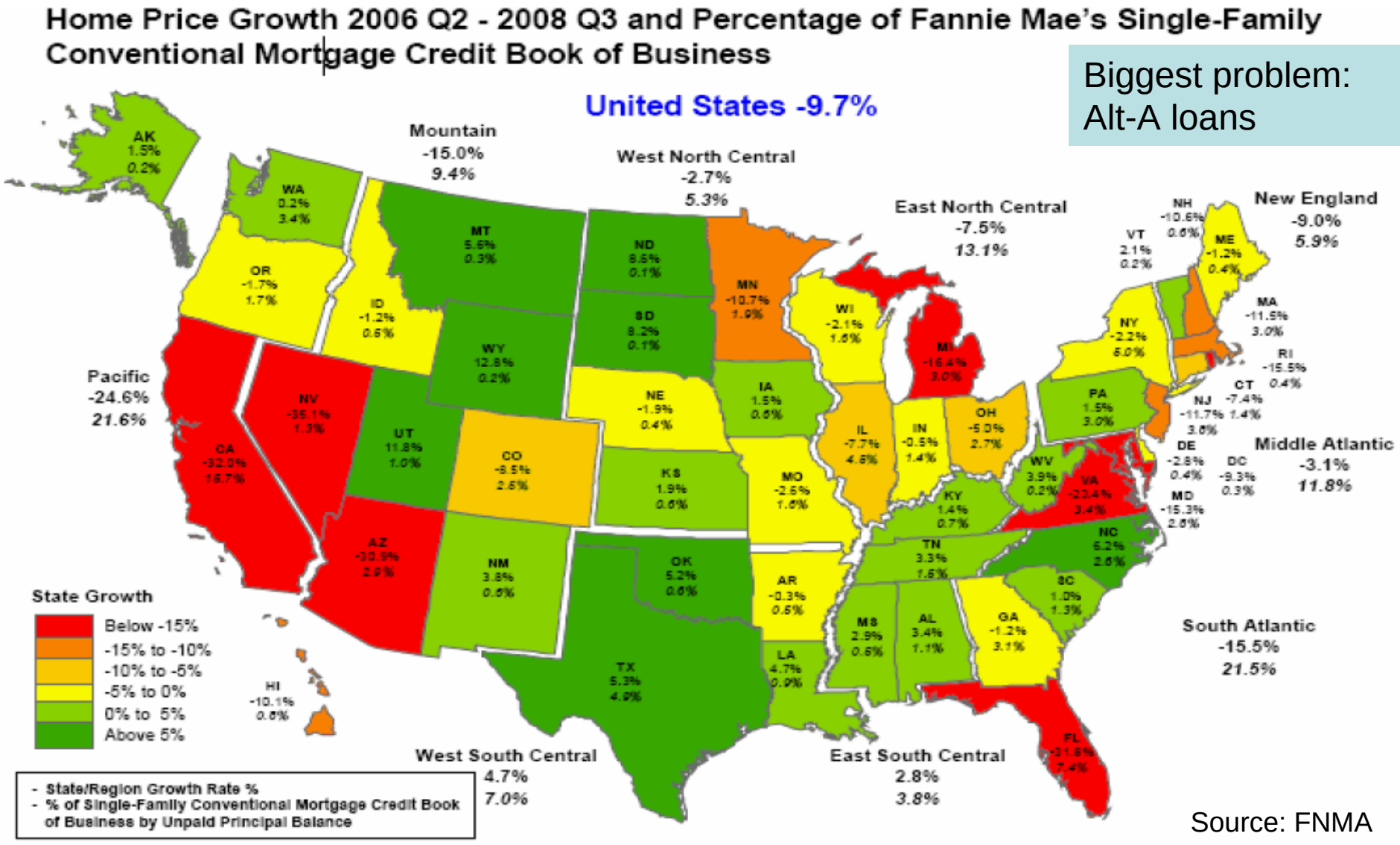


S&P/Case Shiller Index	9.8%	7.7%	10.6%	10.7%	14.6%	14.7%	0.2%	-8.9%

Growth rates are from period end to period end

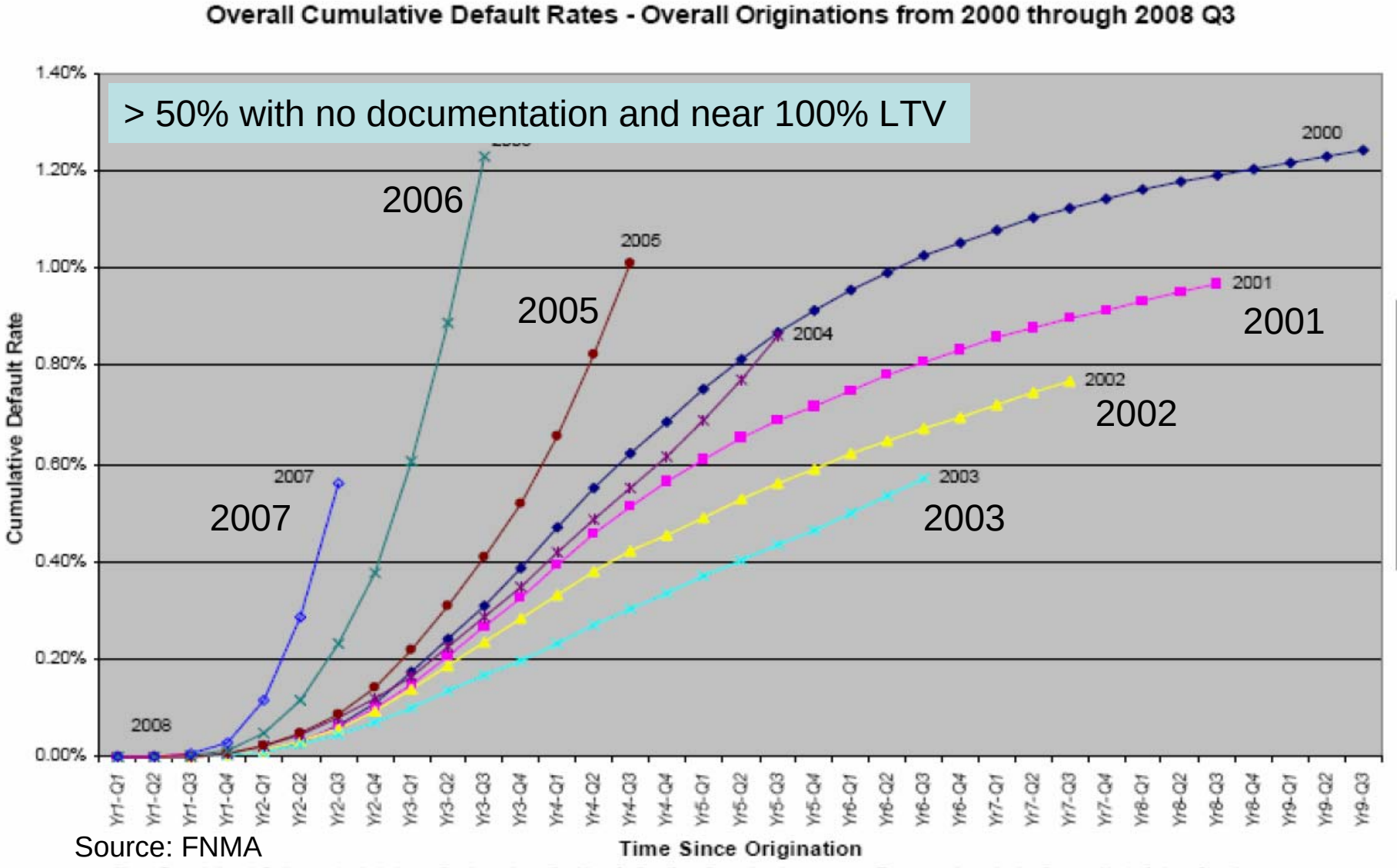
Source: FNMA

Fannie Mae's Pain



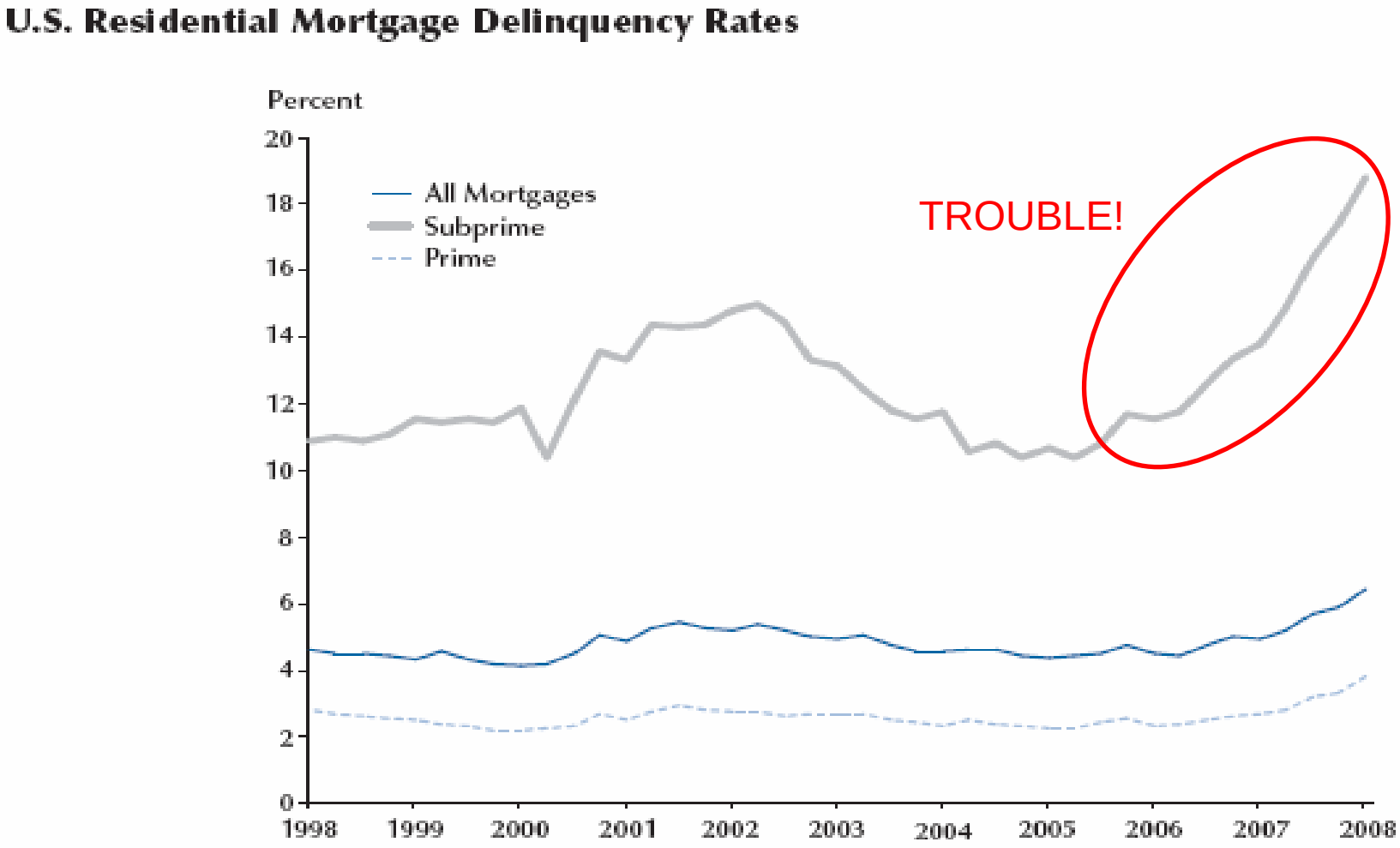
Source: FNMA

Subprime Mortgage Defaults: 2006-7 Junk



Source: FNMA

Mortgage Delinquency – Aggregate Data



Source: Federal Reserve Bank of St. Louis

Event Timeline I

- Late 2006: Subprime lenders begin to fail as delinquencies rise
- April 2007: New Century Mortgage (Los Angeles) fails
- May 2007: UBS closes Dillon Reed hedge fund; Moody's announces ratings review of subprime asset classes; Bernanke says subprime mortgage defaults will not seriously harm US economy.
- June 2007: Bear Sterns backs 2 failing hedge funds; Moody's downgrades 131 bonds backed by second-lien subprime mortgages (mostly 2006)
- July 2007: S&P downgrades subprime mortgage assets; Countrywide announces loses

Events II

Aug 2007: Ameriquest Mortgage fails; Countrywide Mortgage nearly fails; IKB Deutsche Industriebank AG's hedge funds fail as ABCP can not be rolled over; BNP Paribus suspends withdrawals from 3 hedge funds invested in American CDOs; Sachsen LB bank fails.

Sep 2007: Northern Rock fails; NetBank fails; UBS announces $690 mil loss in third quarter.

Mar 2008: Bear Stearns fails, Federal Reserve funds $30B in bad debt

July 2008: IndyMac Bank, large California lender, fails

Sep 2008: Fannie Mae and Freddie Mac are taken over by US government; Lehman Brothers fails with billions in bad debts (~ $40B to $60B)

Federal Reserve Actions I

- Sept 2007: Reduce federal funds target by 50 bp (5.25 -> 4.75).
- Dec 2007: Reduce fed funds to 4.25%; reduce primary credit rate by 150 bps;
- Dec 12: Term Auction Facility introduced – discount window lending against wide range of collateral for longer periods
- Dec 12: Temporary swap lines with ECB ($20B) and SNB ($4B) , for 6 months (limits removed entirely, Oct 2008)
- March 2008:
  - Term Repurchase Transactions begin($100B);
  - Term Security Lending Facility ($100B, 28 days);
  - TAF expanded ($100B);
  - JP Morgan Chase acquires Bear Stearns with Federal Reserve creating off-balance sheet SPV to accept $30B of risky assets;
  - Primary Dealer Credit Facility created
- May: Expand TSLF and TAF.
- June: Bank of America buys Countrywide Mortgage

Federal Reserve Actions II

- July: Extend/expand TSLF and PDCF;
  - introduce auctions of options on draws on TSLF;
  - introduce 84-day TAF loans.
- Sept: Fannie Mae and Freddie Mac taken over by federal government;
  - PDCF collateral eligibility expanded;
  - TSLF expanded; loan to AIG;
  - Asset-Backed Commercial Paper Money Market Mutual Fund Facility (AMLF) established;
  - Goldman Sachs and Morgan Stanley become commercial bank holding companies
  - 14th: Bank of America buys Merrill Lynch
  - 15th: Lehman Bros files for bankruptcy
  - 16th: AIG receives Fed loan of $85B @ LIBOR+850. Federal government becomes 80% owner.

Federal Reserve Actions III

- Sep (continued)
  - 17th: Treasury Supplemental Financing Program
  - 18th: New international swap lines with BOJ, BOE and BOC
  - 19th: Program to lend funds to banks to purchase ABCP from money market mutual funds, after run on money market funds (AMLF)
  - 19th: Plan to repurchase short-term debt of FNMA and FHLMC from primary security dealers
  - 19th: Treasury announces guarantee program for shares in MMMFs as of September 19 (temporary, for one year)
  - 20th: Treasury secretary submits plan to Congress, requesting $700B to be used at his discretion
  - 21st: Goldman Sachs and Morgan Stanley become bank holding companies. **No US investment banks remain.**
  - 25th: JPMorganChase buys Washington Mutual.

Federal Reserve Actions IV

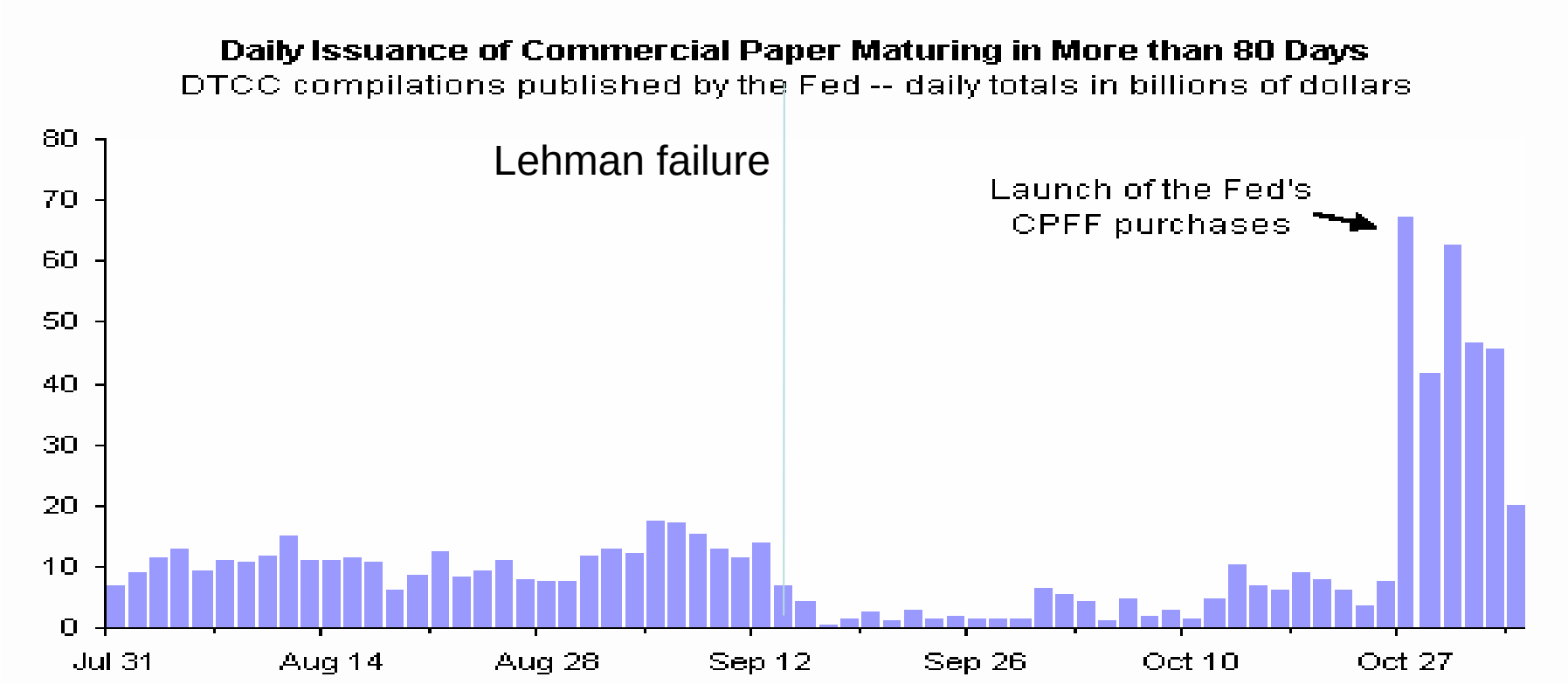
- Sep (continued)
  - 29th: Coordinated highly visible central bank actions to increase US$ liquidity.
    - $330B in new swap lines with BOC, BOE, BOJ, Danmarks Nationalbank, ECB, Norges Bank, Reserve Bank of Australia, Sveriges Riksbank and SNB.
    - Swap lines reach $620B.
  - 29th: TAF is expanded. 84-day auction at $75B size. Two $150B "forward" auctions announced for one- to two-week money over year-end.
- Oct:
  - 3rd: Congress passes Emergency Economic Recovery Act of 2008. Creates Troubled Asset Relief Program with $700B.
  - 6th: Federal Reserve begins paying interest on deposits.
  - 7th: Commercial paper funding facility, SPV to purchase 3-month unsecured and AB CP directly from issuers.
  - 7th: FDIC increases deposit insurance to$250,000
  - 13th: Removes the limit on swap lines, against good collateral

Federal Reserve Actions V

- Oct (con't)
  - 14th: Treasury announces program to add $250B to capital of US banks.
  - 14th: Treasury and FDIC trigger systemic risk exception in FDIC Act to guarantee all senior debt of all FDIC-insured institutions and their holding companies, as well as deposits held in non-interest bearing transaction accounts.
  - 21st: Money Market Investor Funding Facility, series of SPVs to purchase assets from money market mutual funds.
  - 28th: Reserve Bank of New Zealand gets Fed swap line.
  - 29th: IMF establishes a temporary liquidity faciltity

Federal Reserve CP SPV

- Term (> overnight) CP market had been “closed” -- Challenge: design an alternative path to deliver short term funds to business via commercial paper
- Create Special Purpose Vehicle to fund term commercial paper
- Source of funds is Federal Reserve Bank of New York
- Now > $200B, growing rapidly, some project $600B by year end



Source: R.H. Wrightson and Company

Federal Reserve Actions

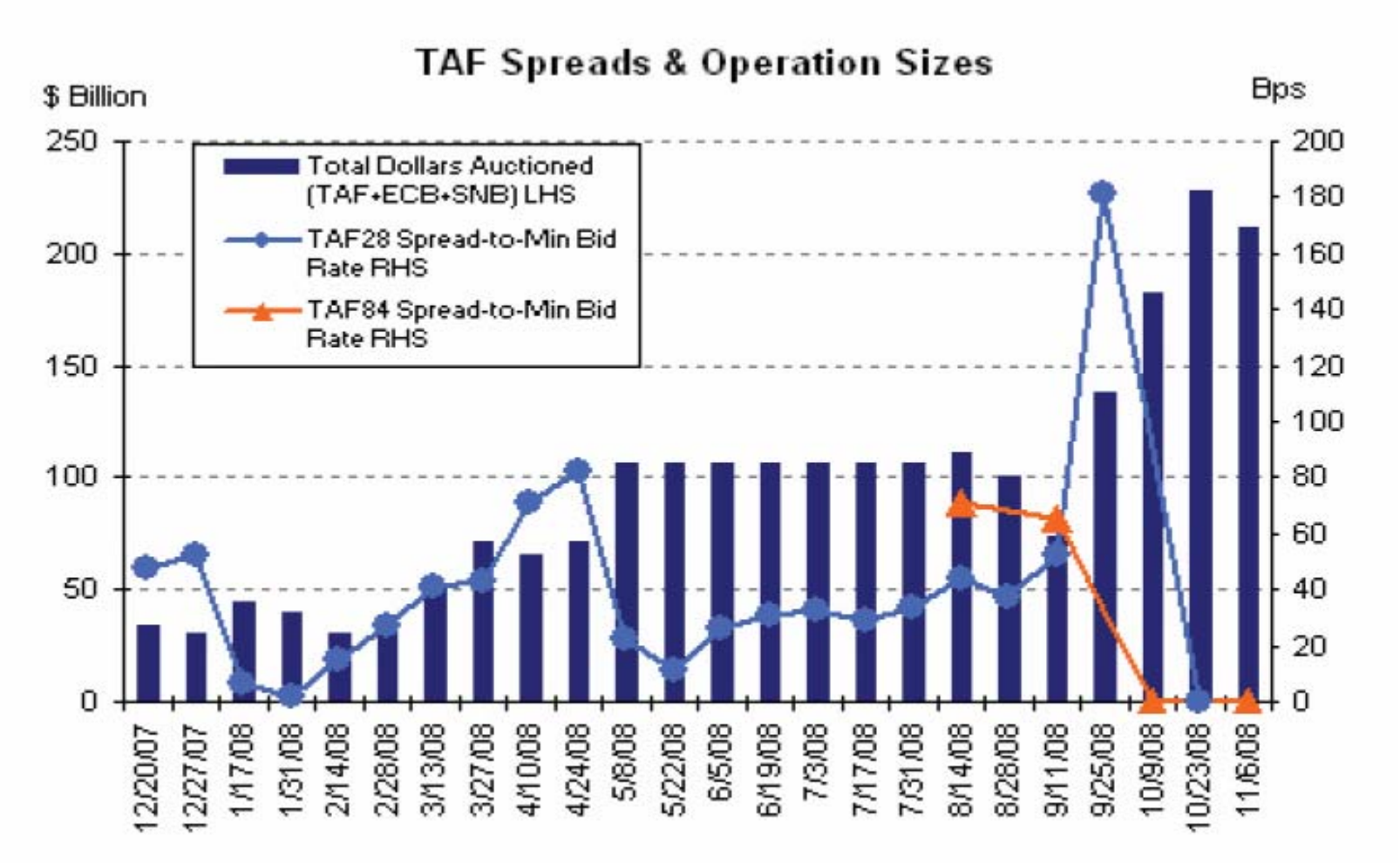
Federal Reserve Credit Facilities
(as of October 31, 2008)
In Millions of Dollars

Facility	Lender	System 10/07	System 10/08	St. Louis 10/07	St. Louis 10/08
Primary	All Reserve Banks	$101.6	$ 98,092.4	$ .4	$ 260.4
Secondary	All Reserve Banks	$ 2.3	$ 14.4	$ 0	$ 0
Seasonal	All Reserve Banks	$132.3	$ 25.1	$22.8	$ 1.6
TAF	All Reserve Banks	NA	$237,818.2	NA	$2,350.0
Bear Stearns[2]	FRB New York	NA	$ 1,178.0	NA	NA
PDCF[3]	FRB New York	NA	$ 77,019.8	NA	NA
AIG[4]	FRB New York	NA	$ 63,388.3	NA	NA
AIG-RMBSF[5]	FRB New York	NA	New	NA	NA
AIG -CDOF[6]	FRB New York	NA	New	NA	NA
AMLF[7]	FRB Boston	NA	$ 91,729.1	NA	NA
CPFF[8]	FRB New York	NA	$225,907.5	NA	NA
MMIFF[9]	FRB New York	NA	NA	NA	NA

Source: Federal Reserve Bank of St. Louis

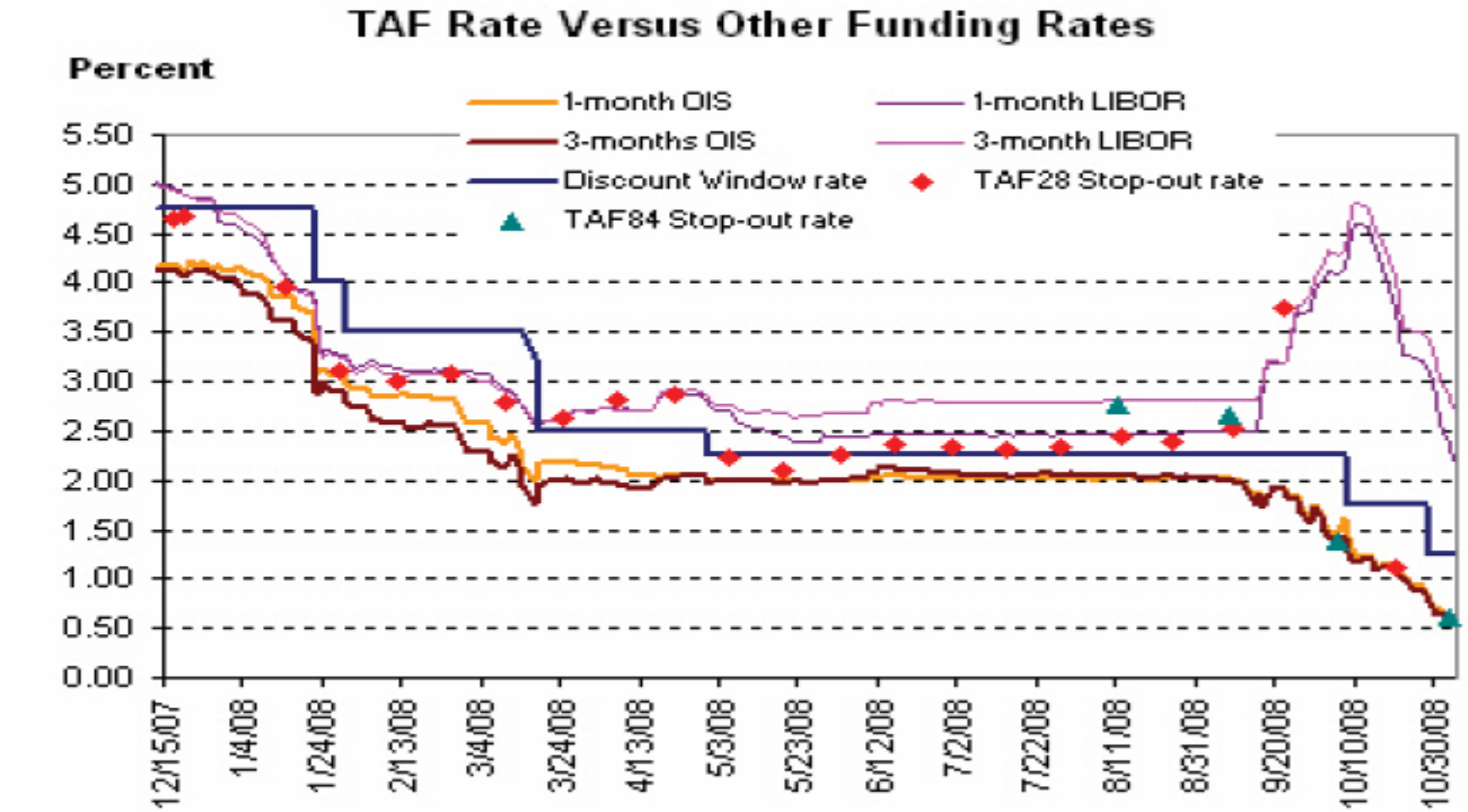
Federal Reserve Actions

For definition of term auction facility (TAF), see Event Timeline above



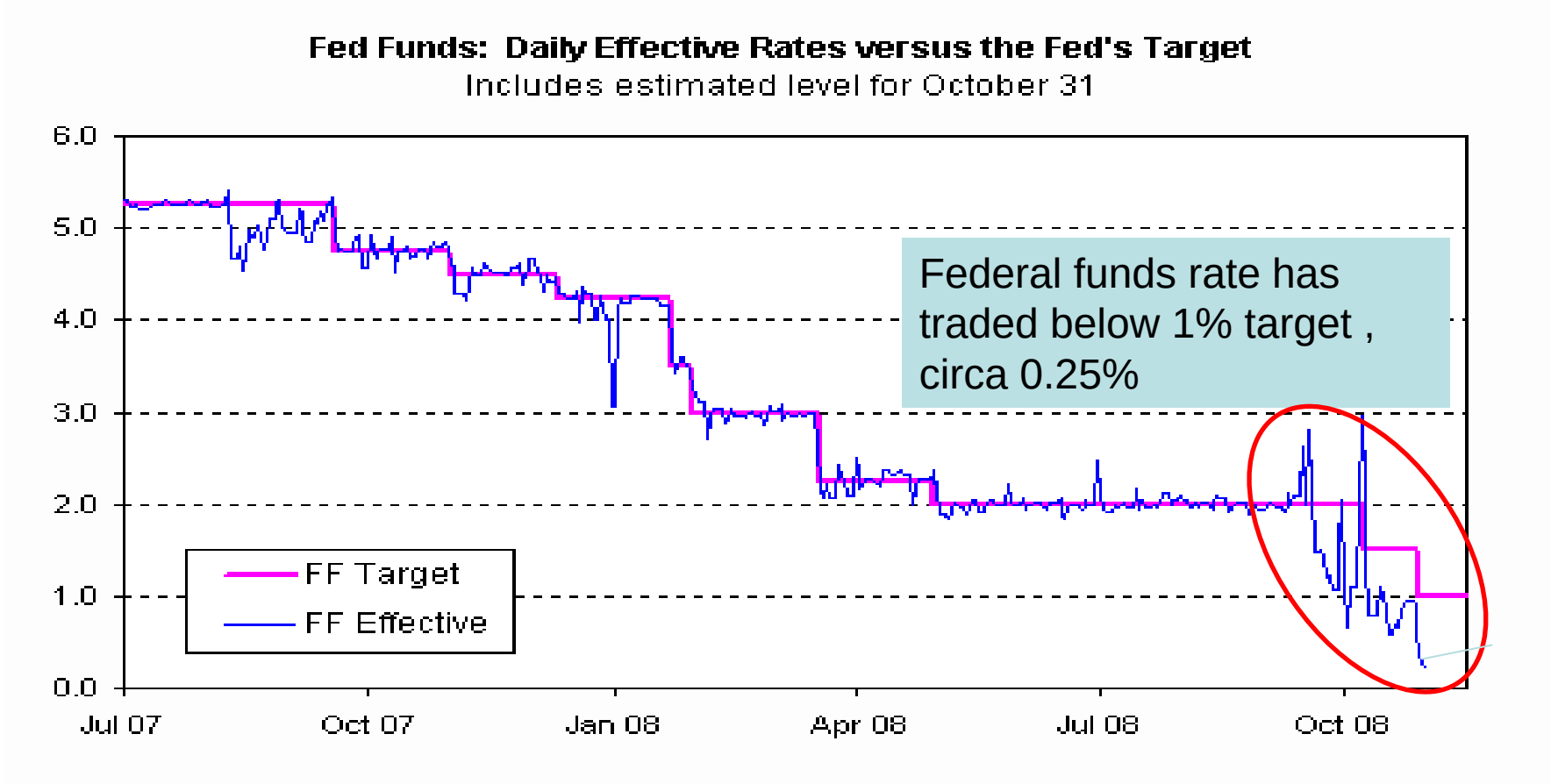
Source: R.H. Wrightson and Company

TAF Provides Inexpensive Funding



Source: R.H. Wrightson and Company

Difficult to separate Monetary Policy and Financial Stability programs: Aggressive stability programs tend to push up banking system excess reserves and down the overnight fed funds rate (below target)

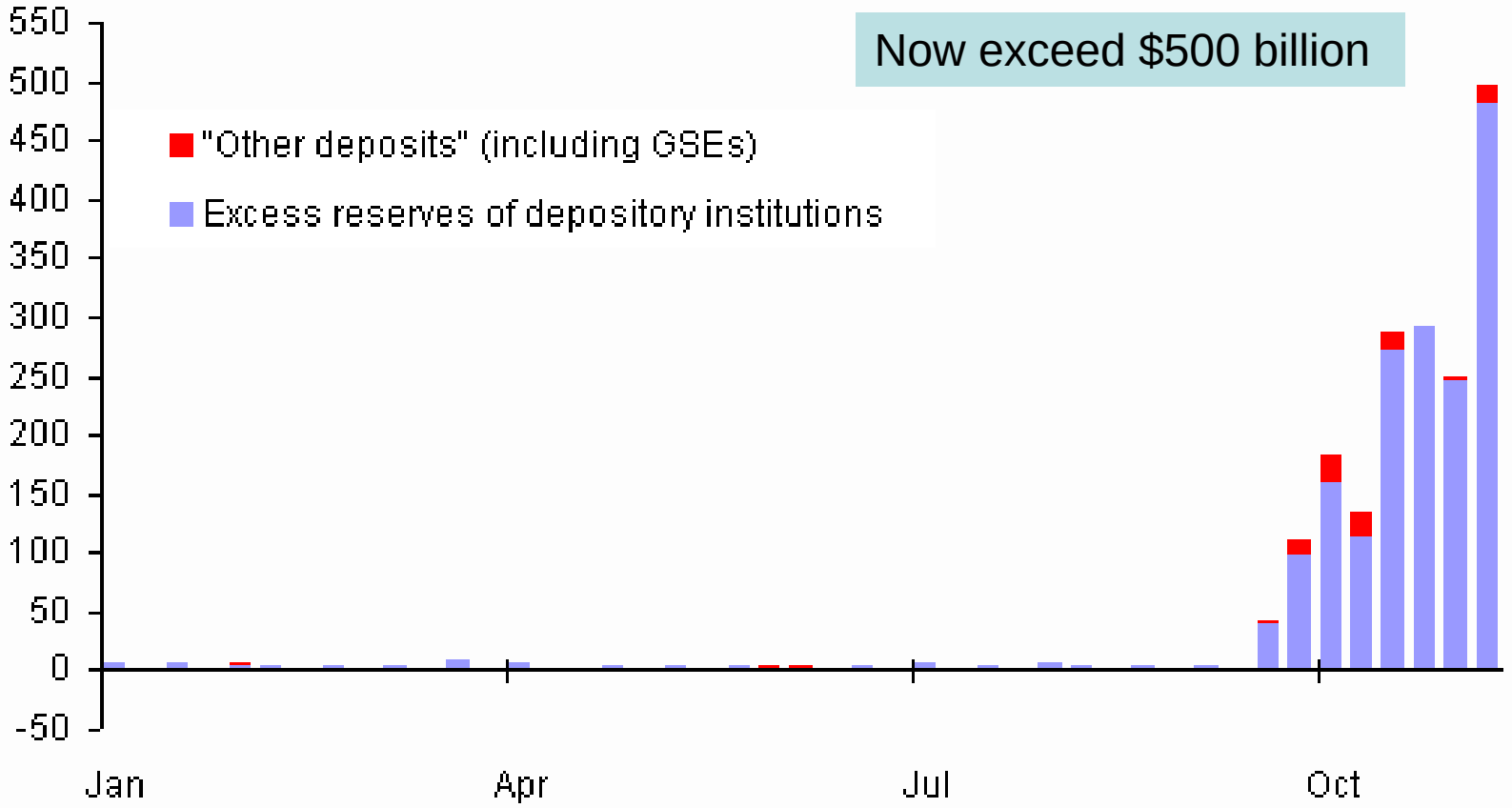


Source: R.H. Wrightson and Company

Excess Reserves at Federal Reserve Banks have increased rapidly since mid-September, to fund Fed programs

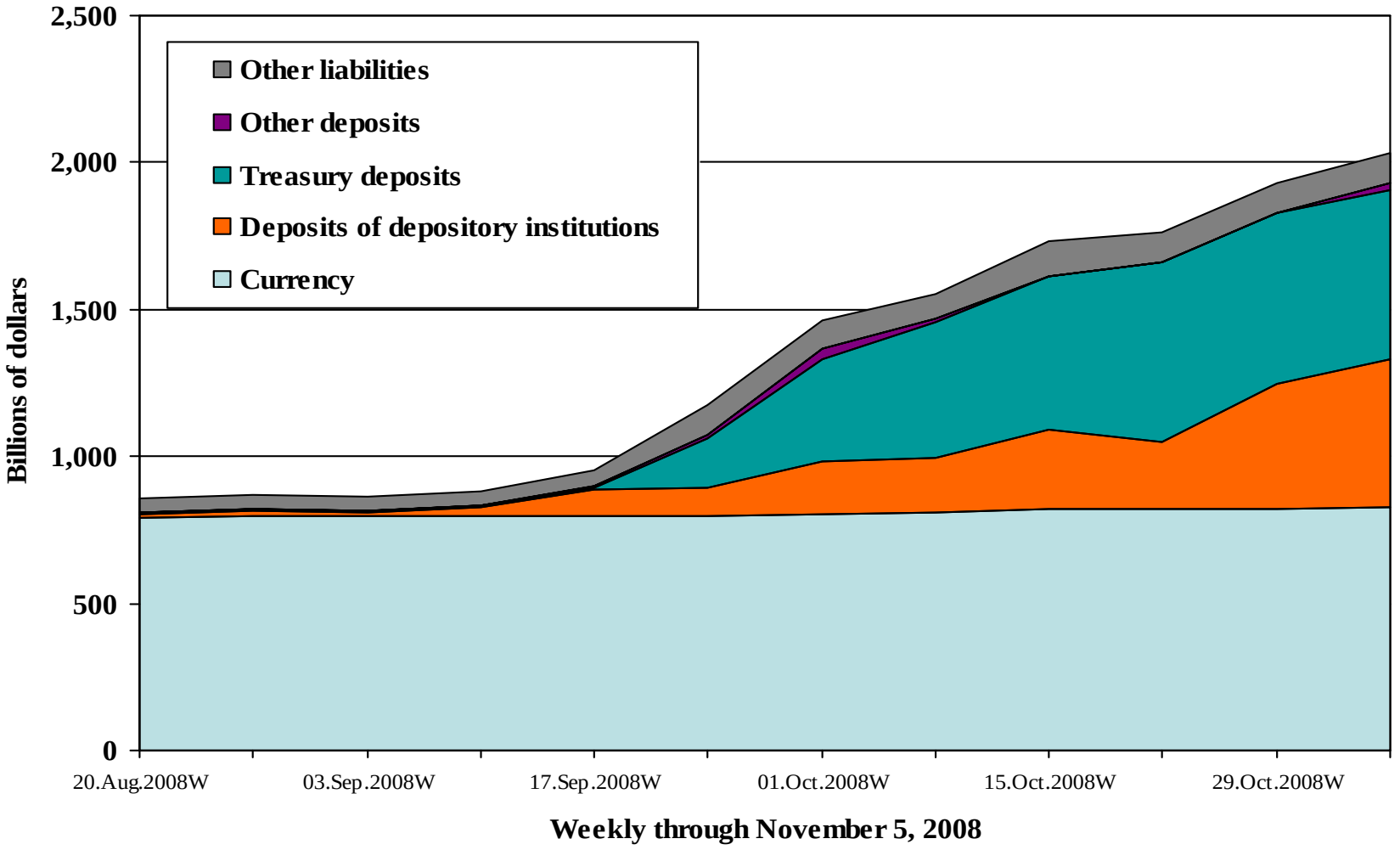
Excess Reserves of Depository Insitutions and "Other" Surplus Fed Balances

Weekly averages in billions of dollars -- through November 5



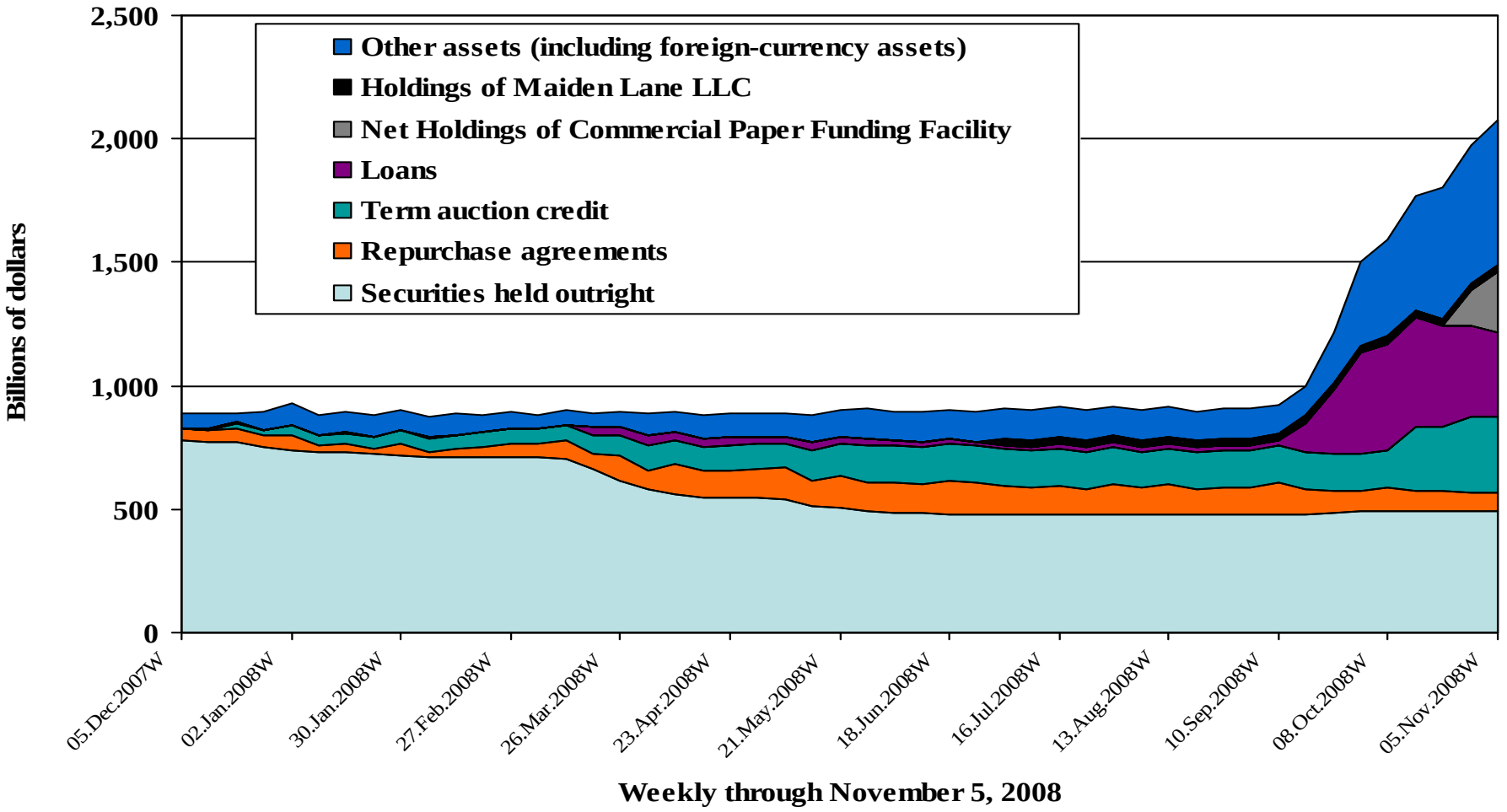
Source: R.H. Wrightson and Company

Federal Reserve Banks' Liabilities



Source: Federal Reserve Bank of St. Louis

Federal Reserve Banks' Assets



Source: Federal Reserve Bank of St. Louis

US Treasury Borrowing Requirement Soars

Composition of the Treasury's Borrowing Requirement in FY 2009: Deficit Financing versus Financial Intermediation

Projected totals in billions of dollars

Fiscal year projections in billions of dollars	Total	Deficit Spending	Secured Lending	Investment in Risk Assets
On-Budget				
Underlying Deficit	550	*550*		
Stimulus Package	150	*150*		
TARP: Equity Purchases	250			*250*
FDIC Working Capital	100			*100*
Total On-Budget	1050	*700*	--	*350*
Off-Budget				
TARP: Distressed Assets	450			*450*
Suppl. Financing Program	300		*300*	
Student Loans	50		*50*	
Other: MBS, IMF, etc.	100		*100*	
Total Off-Budget	900	--	*450*	*450*
Combined FY 2009 Totals	**1950**	**700**	**450**	**800**
As % of GDP	13%	5%	3%	6%
Comparable FY 2008 Estimates	*770*	*455*	*300*	*15*
As % of GDP	5%	3%	2%	0%

As much as $2T FY2009

Source: R.H. Wrightson and Company

See FRB New York web site for updated table

Federal Reserve Bank *of* New York
October 2008

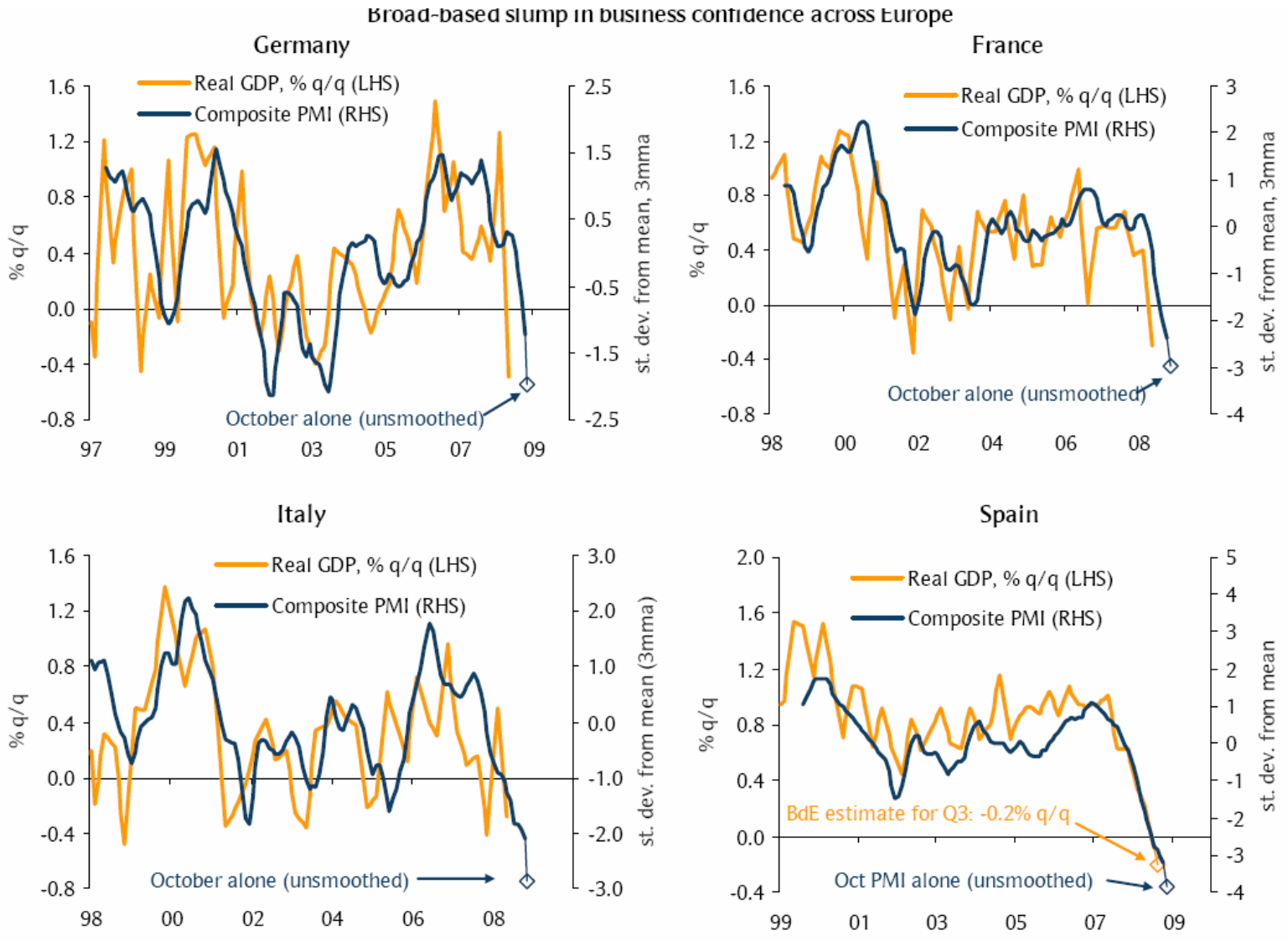
Forms of Federal Reserve Lending to Financial Institutions

	Regular OMOs	Single-Tranche OMO Program (announced March 7, 2008)	Discount Window[1]	Term Discount Window Program (announced August 17, 2007)	Term Auction Facility (announced December 12, 2007)	Primary Dealer Credit Facility (announced March 16, 2008)[2]	Transitional Credit Extentions (announced September 21, 2008)	ABCP Money Market Fund Liquidity Facility (announced September 19, 2008)	Securities Lending	Term Securities Lending Facility (announced March 11, 2008)[2]	Term Securities Lending Facility Options Program[3] (announced July 30, 2008)
Who can borrow?	Primary dealers	Primary dealers	Depository institutions	Primary credit-eligible depository institutions	Primary credit-eligible depository institutions	Primary dealers	U.S. and London broker-dealer subsidiaries of Goldman Sachs, Morgan Stanley, Merrill Lynch	Depository institutions, bank holding companies, U.S. branches and agencies of foreign banks	Primary dealers	Primary dealers	Primary dealers
What are they borrowing?	Funds	Funds	Funds	Funds	Funds	Funds	Funds	Funds	U.S. Treasuries	U.S. Treasuries	U.S. Treasuries
What collateral can be pledged?	U.S. Treasuries, agencies, agency MBS[4]	U.S. Treasuries, agencies, agency MBS, but typically agency MBS	Full range of Discount Window collateral	Full range of Discount Window collateral	Full range of Discount Window collateral	Full range of tri-party repo system collateral[5,6]	Full range of Discount Window collateral and tri-party repo system collateral[6]	First-tier ABCP	U.S. Treasuries	Schedule 1: U.S. Treasuries, agencies, agency MBS Schedule 2: Schedule 1 plus all investment grade debt securities[5]	Schedule 2 TSLF collateral
Is there a reserve impact?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No (loans are bond-for-bond)	No (loans are bond-for-bond)	No (loans are bond-for-bond)
What is the term of loan?	Typically, term is overnight–14 days[7]	28 days[8]	Typically overnight, but up to several weeks[9]	Up to 90 days[10]	28 days or 84 days[8,11]	Overnight	Overnight	ABCP maturity date[12]	Overnight	28 days[8]	Typically 2 weeks or less[13]
Is prepayment allowed if term is greater than overnight?	No	No	Yes	Yes	No	N/A	N/A	No	N/A	No	No
Which Reserve Banks conduct operations?	FRBNY	FRBNY	All	All	All	FRBNY	FRBNY	FRB Boston	FRBNY	FRBNY	FRBNY
How frequently is the program accessed?	Typically once or more daily	Typically weekly	As requested (standing facility)	As requested (standing facility)	Every other week, or as necessary[11]	As requested (standing facility)	As requested (standing facility)	As requested (standing facility)	Daily	Schedule 1: Every other week Schedule 2: Weekly	As necessary[14]
Where are statistics reported publicly?	Temporary OMO activity[15]	Temporary OMO activity[15]	H.4.1 - Factors Affecting Reserve Balances[16]	H.4.1 - Factors Affecting Reserve Balances[16]	TAF Activity[15]	H.4.1 - Factors Affecting Reserve Balances[16]	H.4.1 - Factors Affecting Reserve Balances[16]	H.4.1 - Factors Affecting Reserve Balances[16]	Securities lending activity	Term securities lending facility activity[15]	Term securities lending facilty options program activity[15]

CPFF (7Oct2008): Commercial paper funding facility

MMIFF (22Oct2008): Money market investor funding facility

All of Europe Is Slow

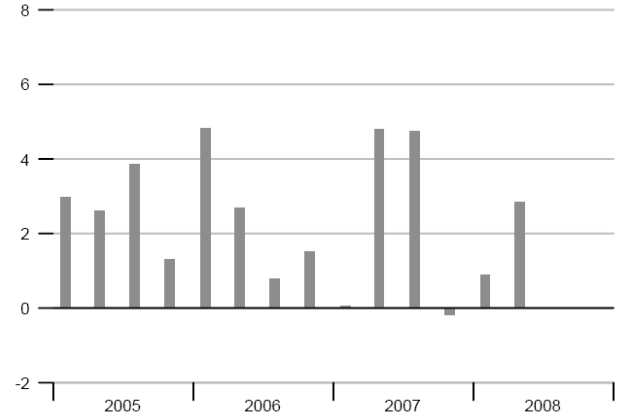


Source: Ecowin, Datastream, Reuters, Barclays Capital

Why Worry? Because economic activity is slowing

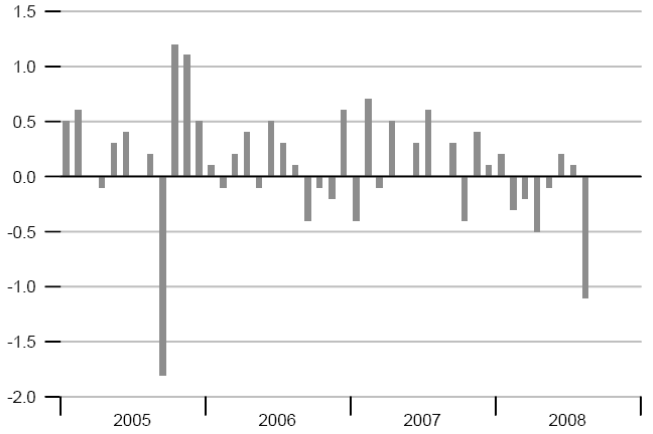
Real GDP Growth

Compounded annual rates of change



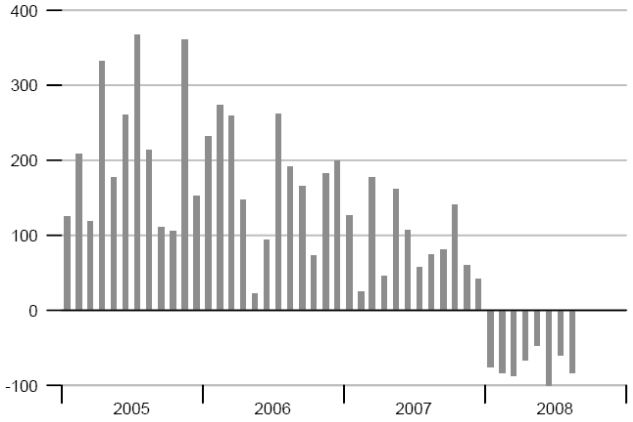
Industrial Production

Percent change



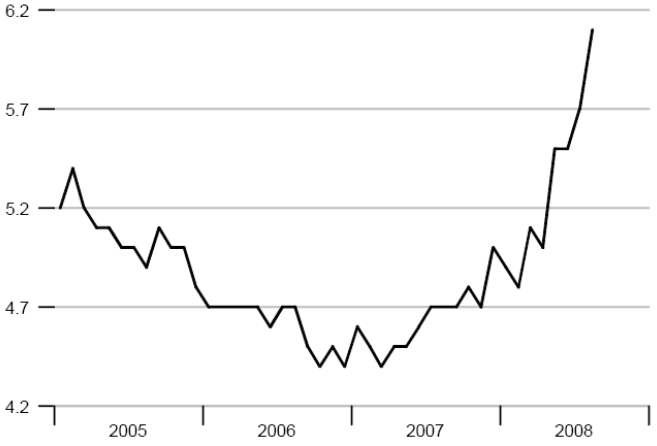
Change in Nonfarm Payrolls

Thousands



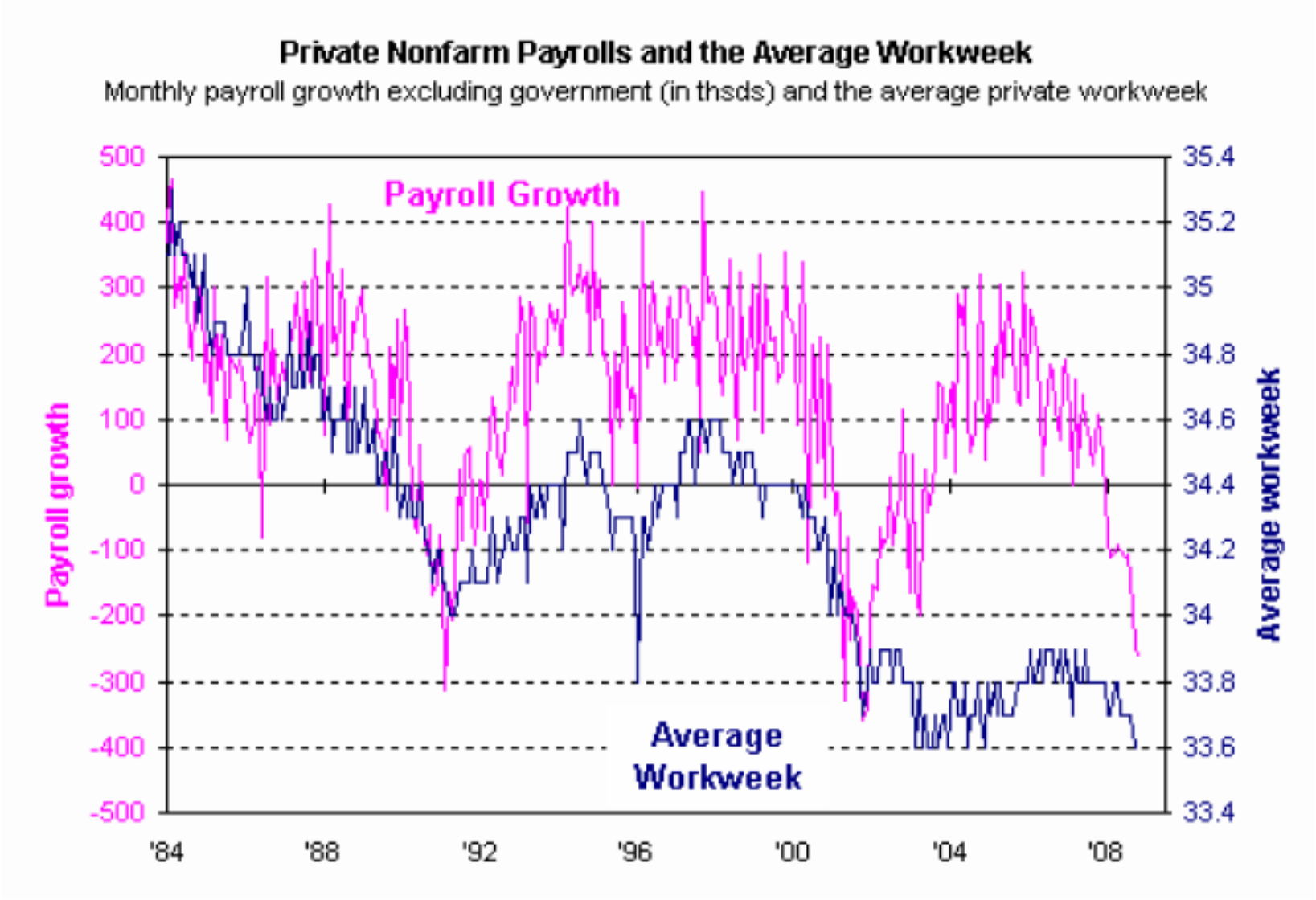
Unemployment Rate

Percent of labor force



For updated data, see <research.stlouisfed.org/publications/net>

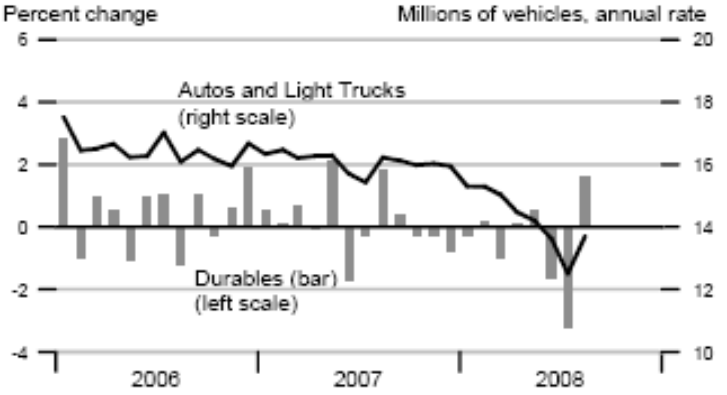
US Economy Lost 1.2M jobs in 2008



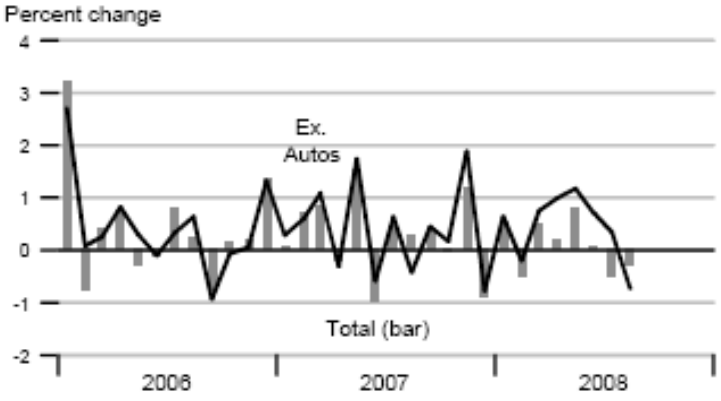
Why Worry?

Consumer Sentiment (U. of Michigan)

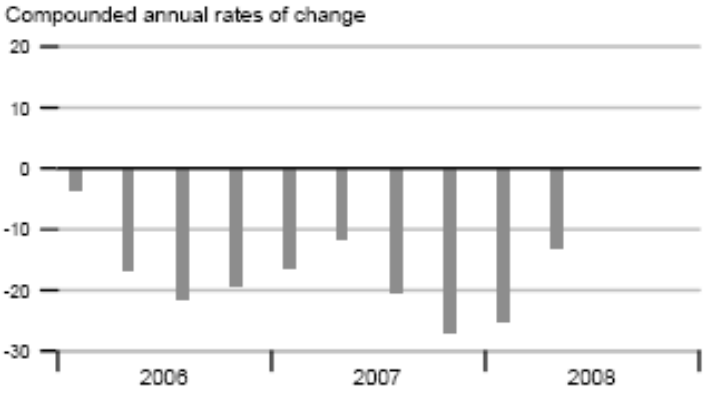
Real Durables Consumption & Vehicle Sales



Retail & Food Services



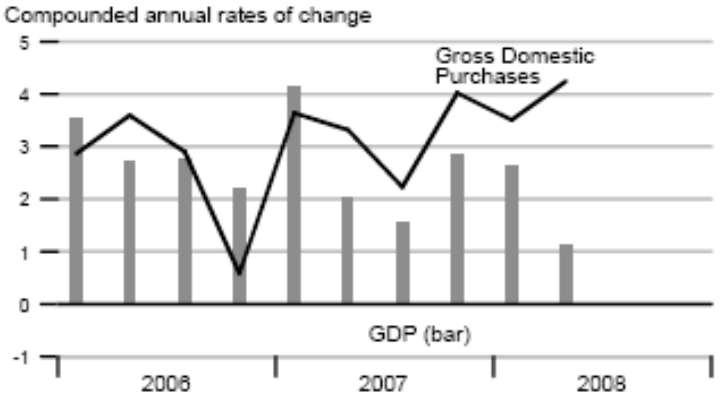
Real Residential Fixed Investment



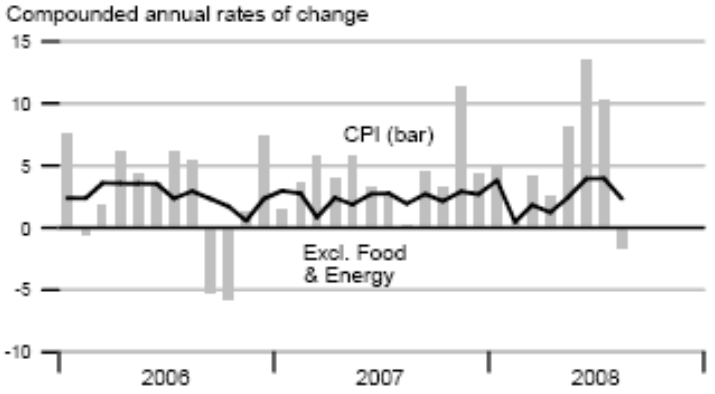
For updated data, see <research.stlouisfed.org/publications/net>

Why Worry?

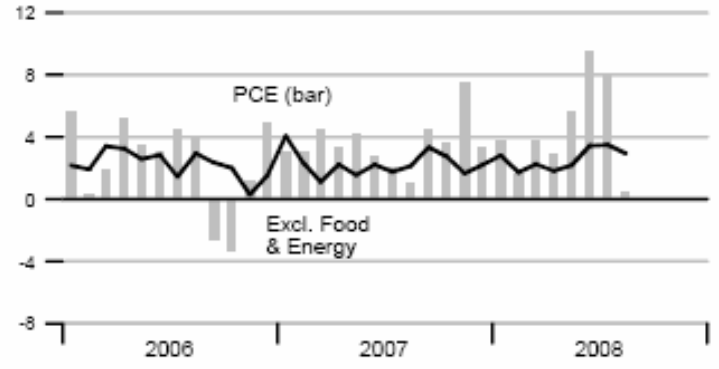
NIPA Chain Price Indexes



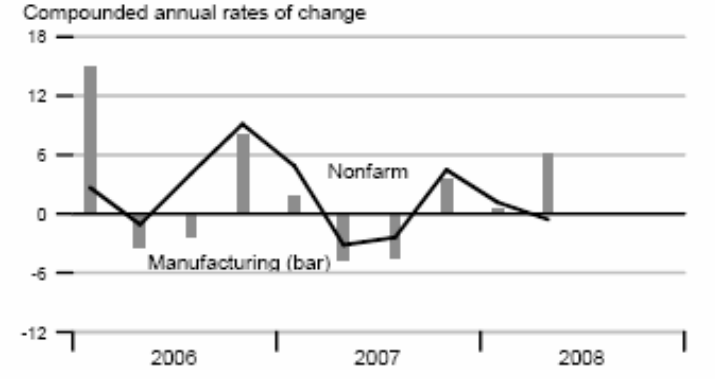
Consumer Price Index



Consumption Chain Price Index



Unit Labor Cost



For updated data, see <research.stlouisfed.org/publications/net>

Why Worry?


Existing Home Sales
6000
5000
Housing Starts
New Home Sales
2000
1000
0
00
01
02
03
04
05
06
07
08

Economic Outlook: Bleak 2008 Q4 in the United States

- Blue Chip Survey (November 2008)
  - Real GDP
    - Q3 -0.3%
    - Q4 -2.8% YOY 0.1% (YOY, 2009 0.6%)
  - GDP Price Index
    - Q3 4.2%
    - Q4 1.7%
- Barclays Capital (November 2008)
  - Real GDP, Q4: ~ -3.5%
- Macroeconomic Advisers (St. Louis) (November)
  - Real GDP, Q4: -3.8%

Suggestions for Further Reading

Mizen, Paul (2008). "The Credit Crunch of 2007-2008: A Discussion of the Background, Market Reactions, and Policy Responses," Federal Reserve Bank of St Louis *Review*, September/October, 90(5), 531-568. [best recent article, available free at <research.stlouisfed.org>]

Bernanke, Ben (2008). "The Future of Mortgage Finance in the United States," speech, October 31, 2008 (available on the Federal Reserve Board web site).

Bullard, James (2008). "The U.S. Economy and Financial Market Turmoil," speech, October 14, 2008 (available on the Federal Reserve Bank of St Louis web site <stlouisfed.org>

Fabozzi, Frank (2005). *Handbook of Mortgage-Backed Securities.* This author has several related books, with similar titles.

(Good newspaper references are the *Financial Times* and *the New York Times. A*lso the numerous press releases on the Federal Reserve Board web site.)