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# The Subprime Turmoil: What's Old, What's New, and What's Next

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# Historical Approach: Summary

- If you look at subprime crisis through the lens of historical real estate related banking crises, is it surprising or old hat?

Origins

- Largely old hat. Loose money (low real rates) and housing subsidies delivered via leverage.
- New element: Huge buy-side agency problem.

Propagation

- What's old? Liquidity-shocked credit spreads and quantity rationing in money markets.
- What's new?
  - Capital raising, reflecting bank structure and deregulation.
  - Aggressive government intervention.
  - Protracted uncertainty about incidence of losses, reflecting nature of subprime assets and their securitization.

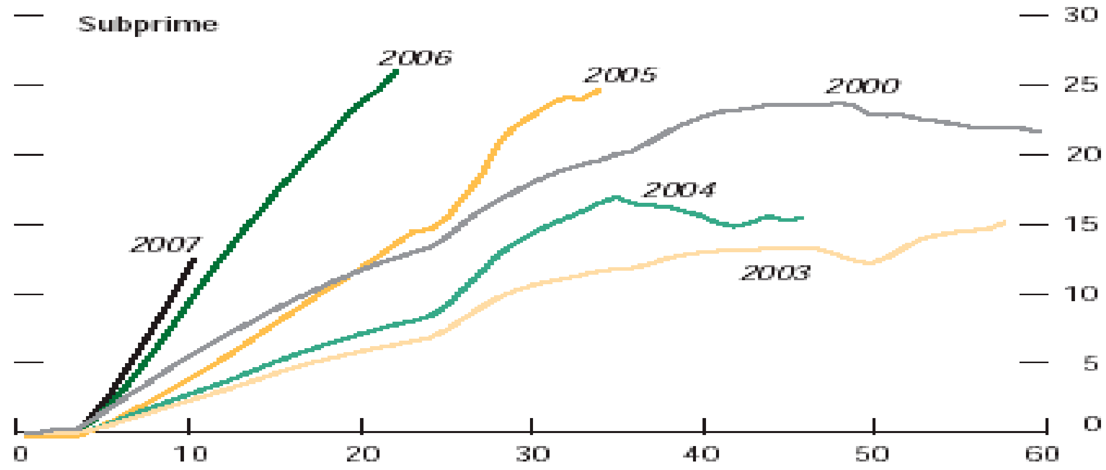
# What Happened?

- Imprudent lending, underpricing and overrating of mortgage risks. (expected loss of 4%, then 6% for subprime as late as 2006 led to excessive leverage, huge offerings even after problems were visible in mid 2006.
- Subprime credit collapse is part of a broader international over-investment problem (Iceland, Landesbanken).
- Securitization complexity has made it difficult to detect the incidence of losses. Subprime MBS is structured with extreme complexity, and that is just the first layer of securitization.
- MBS => CDO => LSS => ABCP
- ABCP and SIVs => Banks, MMMF, IBs
- Large and opaque credit default swap market amplified shocks as financial institutions failed.

# What Happened? (Cont'd)

- Credit spreads show large liquidity shock effects (Schwarz 2008).
- Quantitative adjustment is also important in money markets (ABCP, repos, Libor, now nonfinancial CP).
- Collapse of confidence in mortgage securitization, but not others (until recently).
- Whole US financial system has been transformed (Fannie and Freddie in conservatorship, standalone IBs gone, massive bank consolidation).

(60+ day delinquencies, in percent of balance)



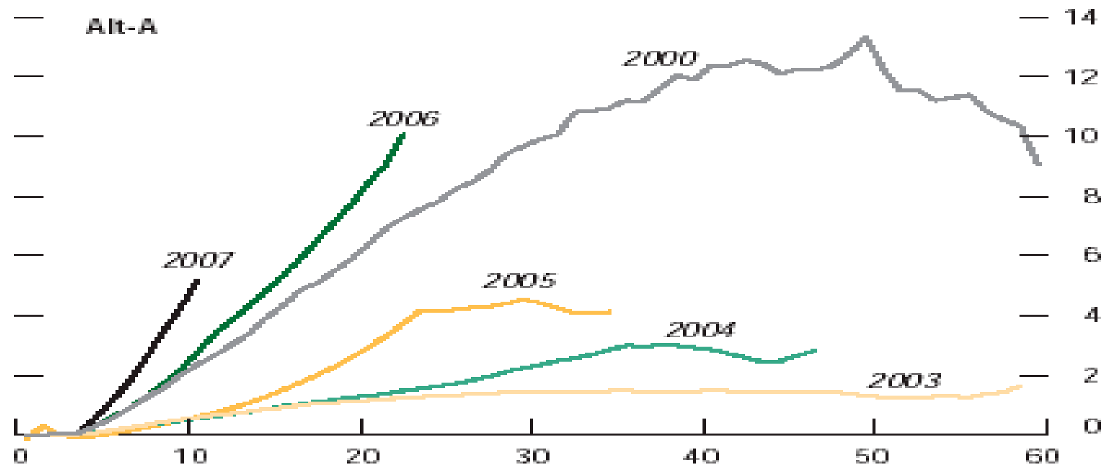
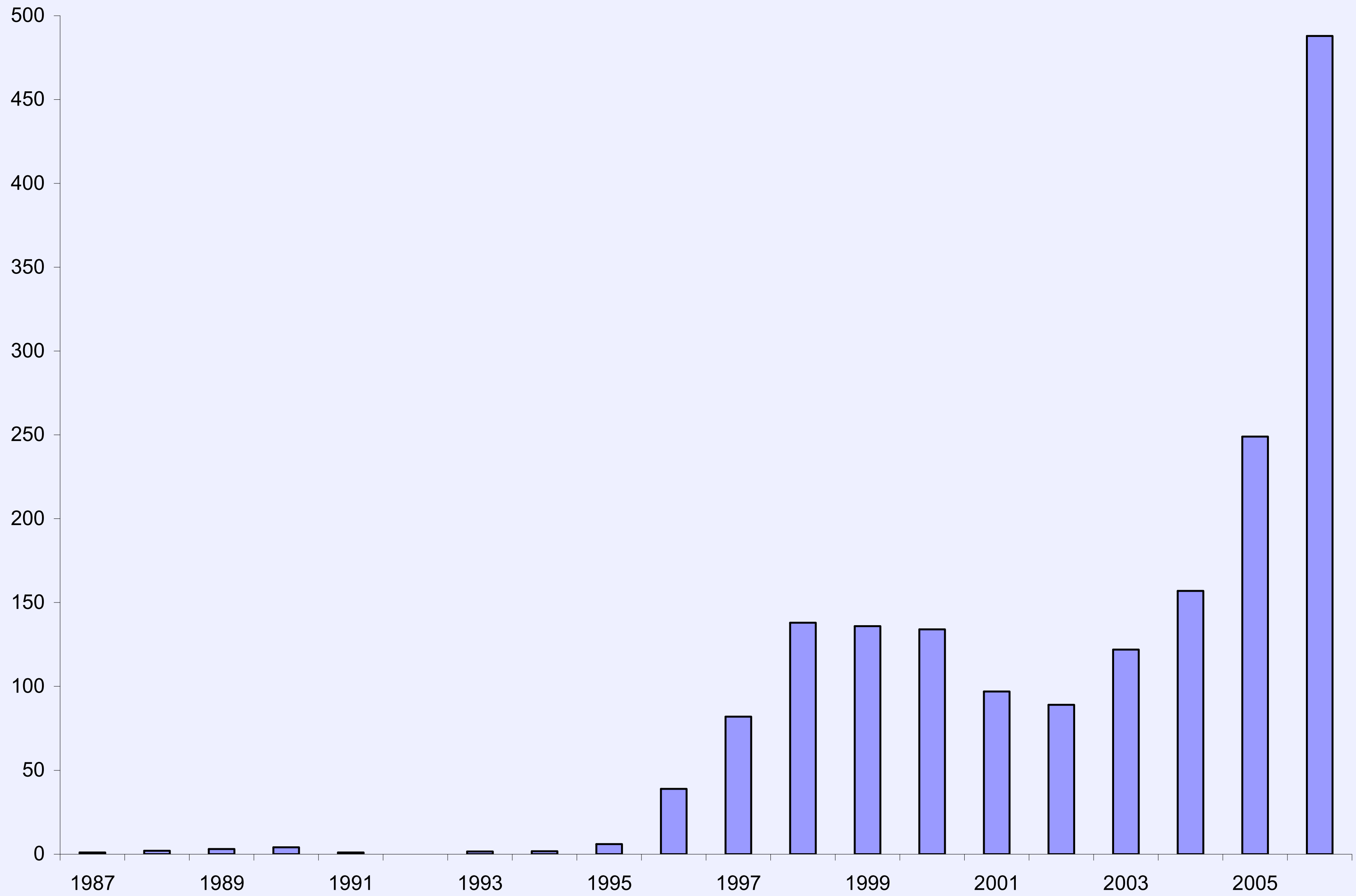



Figure 1: Annual Cash CDO Issuance



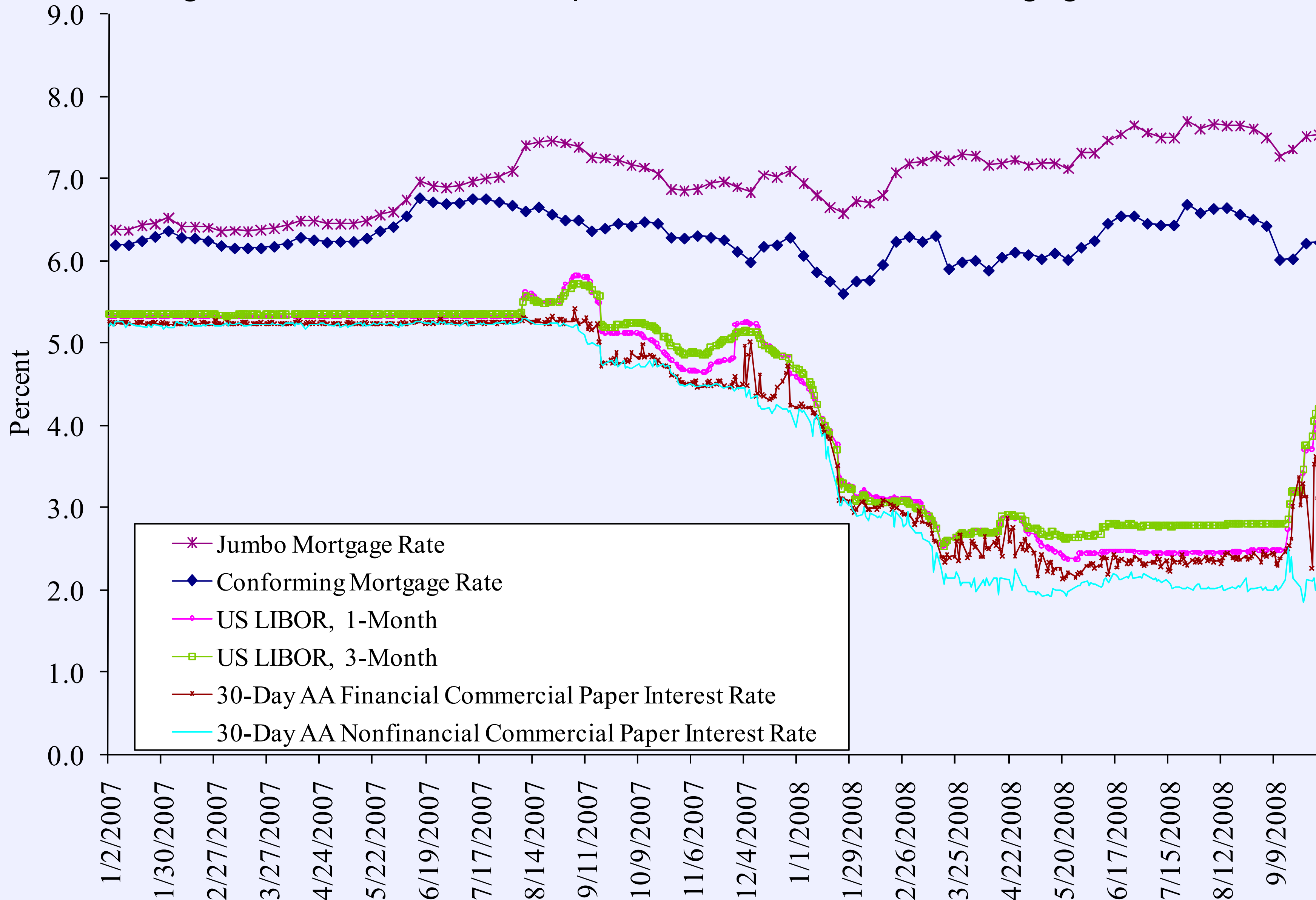


Figure 10: Commercial Paper Rates, LIBOR, and Mortgage Rates
Percent
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/2/2007
1/30/2007
2/27/2007
3/27/2007
4/24/2007
5/22/2007
6/19/2007
7/17/2007
8/14/2007
9/11/2007
10/9/2007
11/6/2007
12/4/2007
1/1/2008
1/29/2008
2/26/2008
3/25/2008
4/22/2008
5/20/2008
6/17/2008
7/15/2008
8/12/2008
9/9/2008
Jumbo Mortgage Rate
Conforming Mortgage Rate
US LIBOR, 1-Month
US LIBOR, 3-Month
30-Day AA Financial Commercial Paper Interest Rate
30-Day AA Nonfinancial Commercial Paper Interest Rate

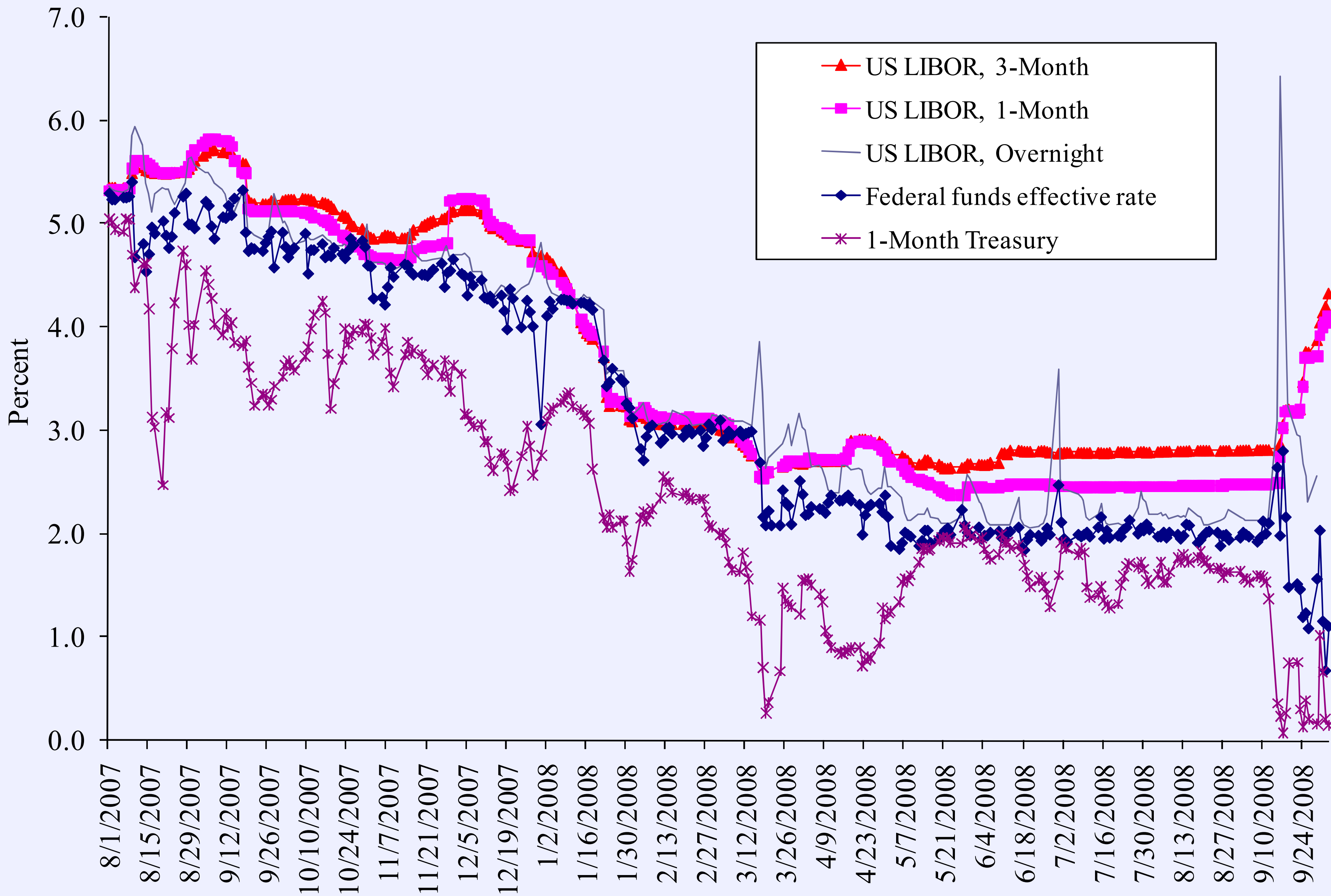


Figure 12: LIBOR, Treasury Bill, and Fed Funds Rates
US LIBOR, 3-Month
US LIBOR, 1-Month
US LIBOR, Overnight
Federal funds effective rate
1-Month Treasury
Percent
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
8/1/2007
8/15/2007
8/29/2007
9/12/2007
9/26/2007
10/10/2007
10/24/2007
11/7/2007
11/21/2007
12/5/2007
12/19/2007
1/2/2008
1/16/2008
1/30/2008
2/13/2008
2/27/2008
3/12/2008
3/26/2008
4/9/2008
4/23/2008
5/7/2008
5/21/2008
6/4/2008
6/18/2008
7/2/2008
7/16/2008
7/30/2008
8/13/2008
8/27/2008
9/10/2008
9/24/2008

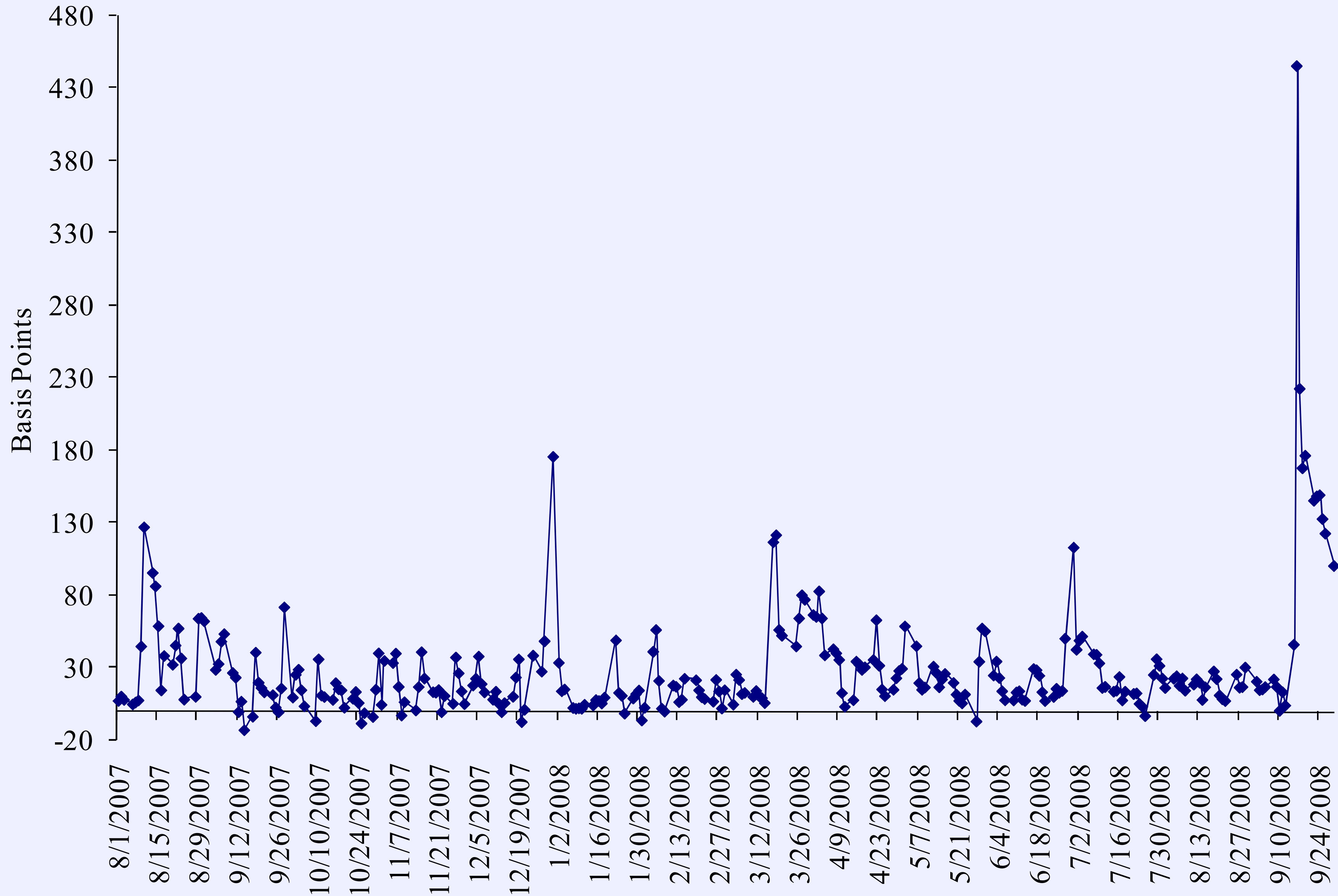


Figure 13: Overnight Libor-Fed Funds Spread
Basis Points
480
430
380
330
280
230
180
130
80
30
-20
8/1/2007
8/15/2007
8/29/2007
9/12/2007
9/26/2007
10/10/2007
10/24/2007
11/7/2007
11/21/2007
12/5/2007
12/19/2007
1/2/2008
1/16/2008
1/30/2008
2/13/2008
2/27/2008
3/12/2008
3/26/2008
4/9/2008
4/23/2008
5/7/2008
5/21/2008
6/4/2008
6/18/2008
7/2/2008
7/16/2008
7/30/2008
8/13/2008
8/27/2008
9/10/2008
9/24/2008

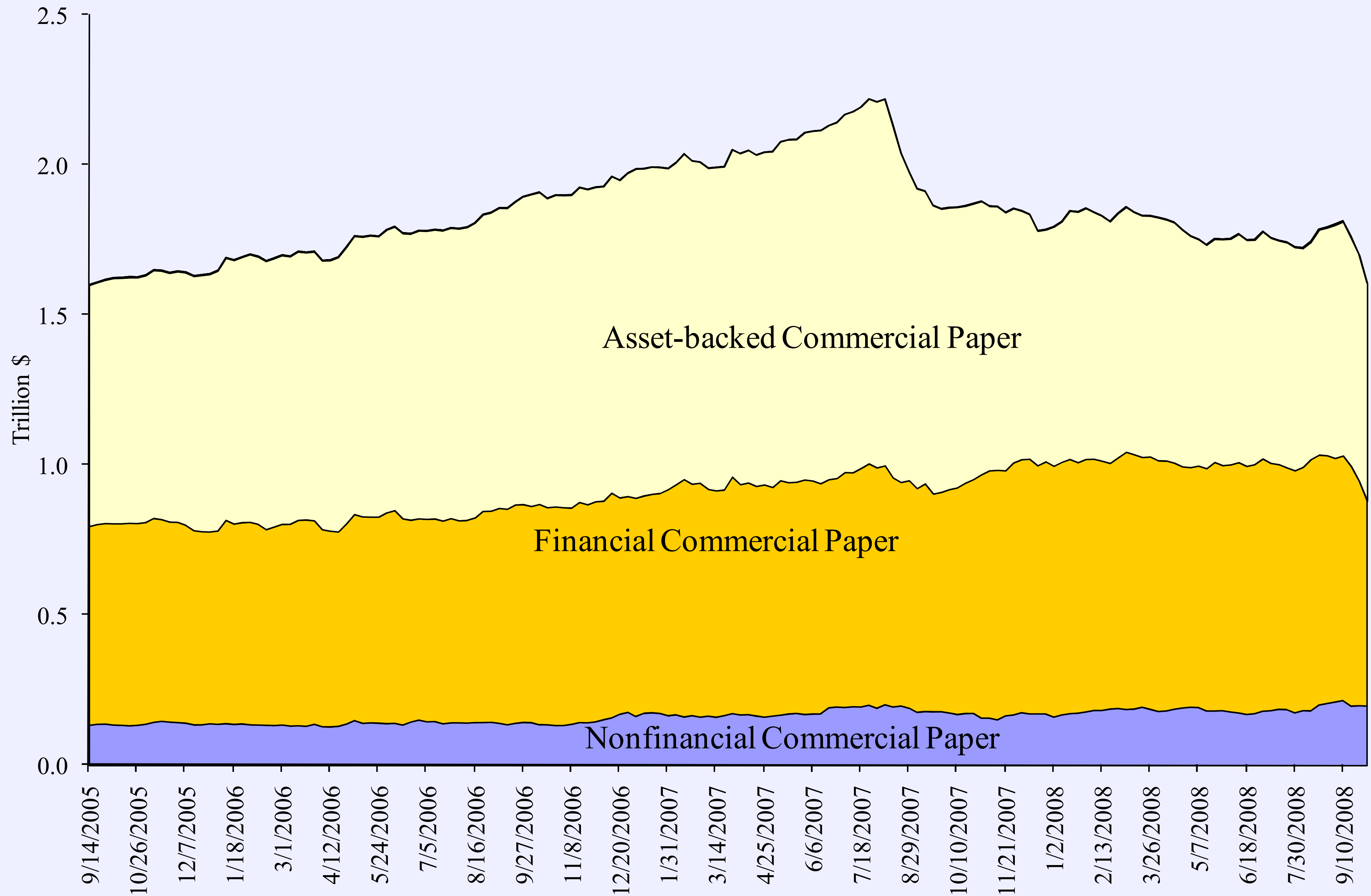
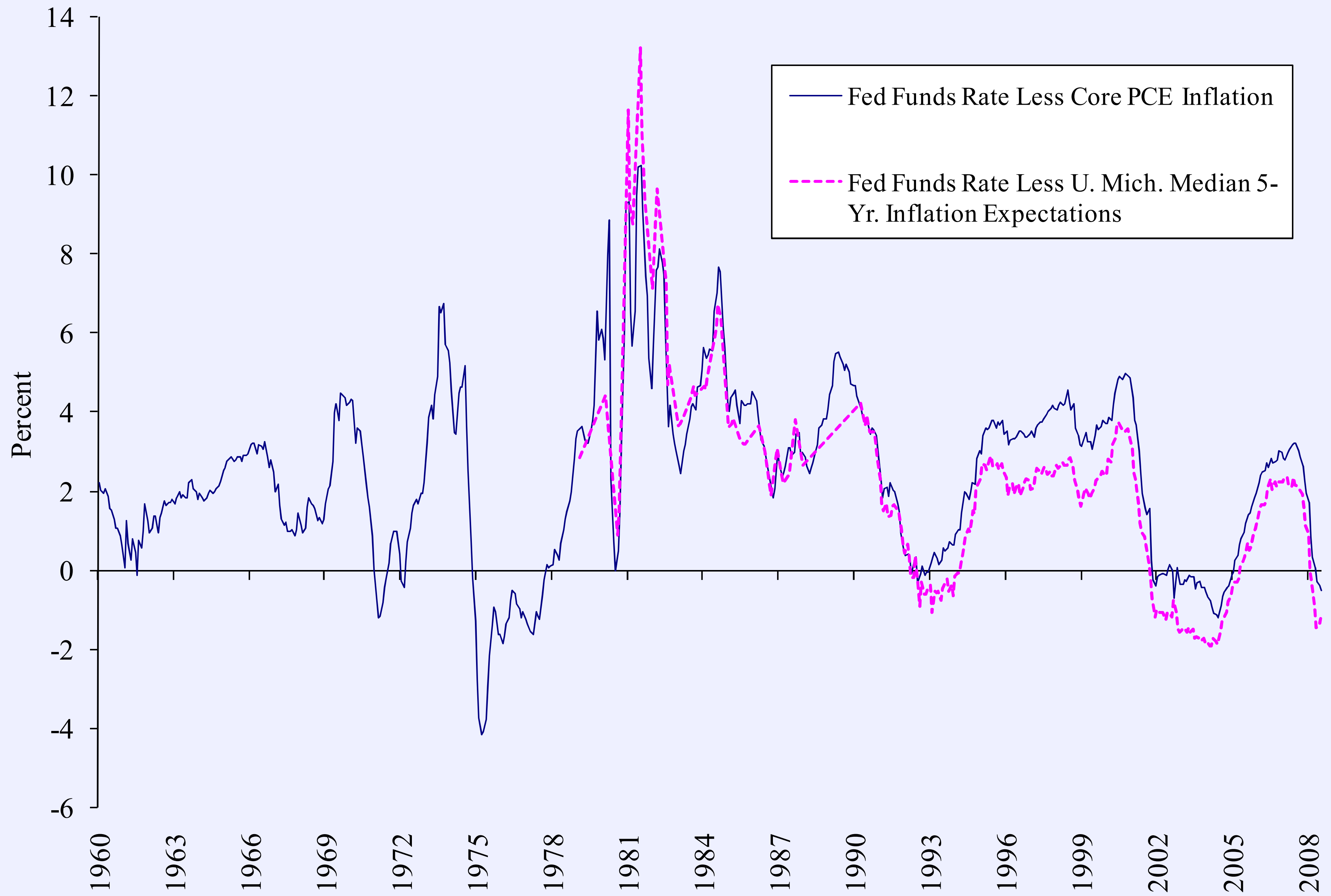


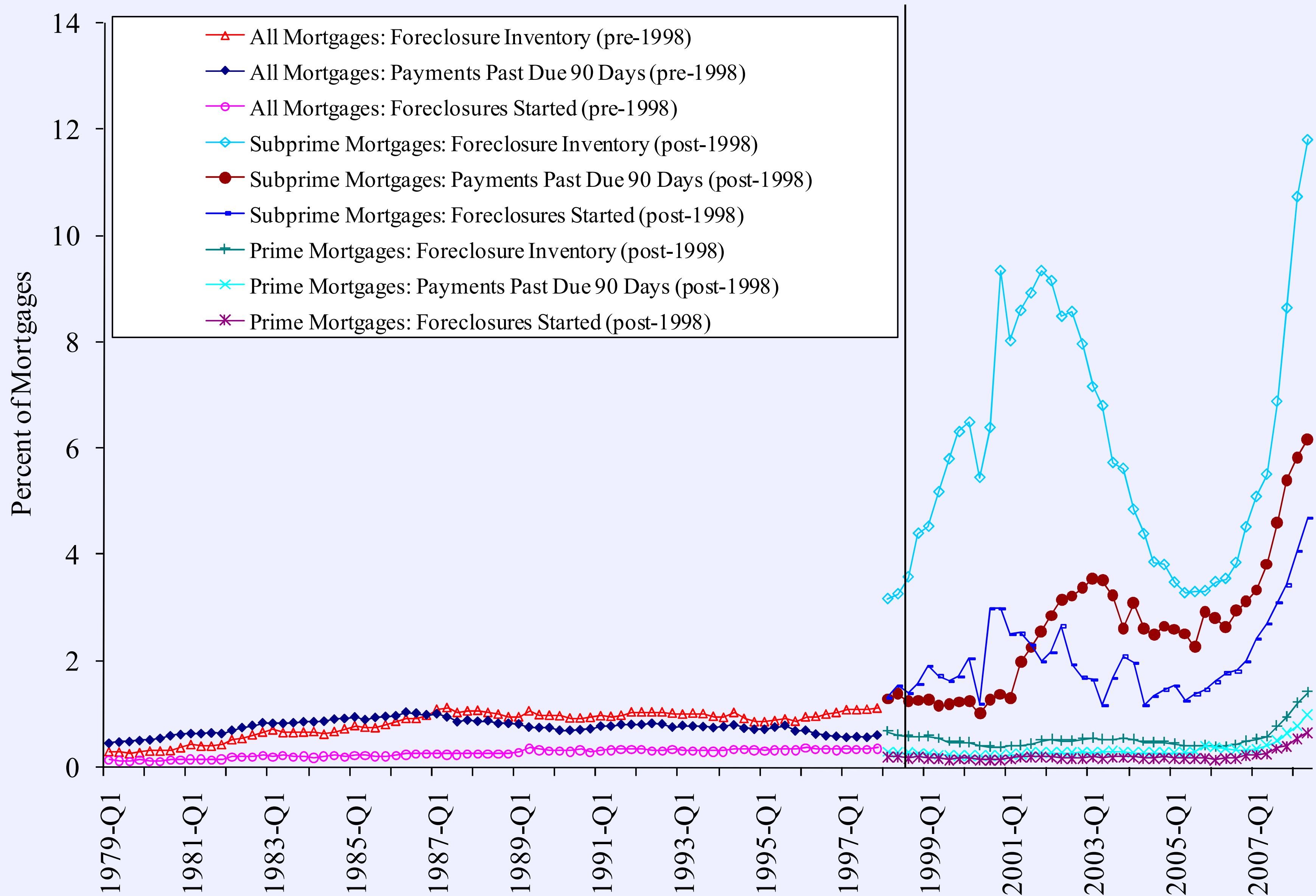
Figure 9: Commercial Paper Outstanding (Weekly, Seasonally Adjusted)
Trillion $
2.5
2.0
1.5
1.0
0.5
0.0
Asset-backed Commercial Paper
Financial Commercial Paper
Nonfinancial Commercial Paper
9/14/2005
10/26/2005
12/7/2005
1/18/2006
3/1/2006
4/12/2006
5/24/2006
7/5/2006
8/16/2006
9/27/2006
11/8/2006
12/20/2006
1/31/2007
3/14/2007
4/25/2007
6/6/2007
7/18/2007
8/29/2007
10/10/2007
11/21/2007
1/2/2008
2/13/2008
3/26/2008
5/7/2008
6/18/2008
7/30/2008
9/10/2008

# Why did this happen?

- Like other housing collapses, loose money (magnified by Greenspan conundrum) and government subsidies of borrowing (Fannie Mae and Freddie Mac, and other elements) promoted excessive risk taking.
- Buy side agency problem. Structure of fees quite important (not enough "skin in the game").
- Ineffective prudential regulation failed to stop the excessive risk taking, and encouraged problems through various distortions (anti-notching proposal, prudential regulation of securitization, outsourcing to ratings agencies.).
- Ratings agencies did serve the agents of investors (which is what they are supposed to do, but regs distorted what investors wanted).
- Canard of "deregulation": Latent flaws in regulation and agency were long present, but were triggered by three factors: (1) loose money, (2) political shifts that pushed Fannie and Freddie into making markets for subprime, and (3) particular historical circumstances that gave "plausible deniability" to low loss projections.
  - (The "plausible deniability" equilibrium: First peak of subprime foreclosure rate over six years ago! Losses were small, given rising home prices. Extrapolated into PD and LGD assumptions (idiotic), which allowed high leverage, high growth.)



*Real* Fed Funds Rate
Fed Funds Rate Less Core PCE Inflation
Fed Funds Rate Less U. Mich. Median 5-Yr. Inflation Expectations
Percent
14
12
10
8
6
4
2
0
-2
-4
-6
1960
1963
1966
1969
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
2008



All Mortgages: Foreclosure Inventory (pre-1998)
All Mortgages: Payments Past Due 90 Days (pre-1998)
All Mortgages: Foreclosures Started (pre-1998)
Subprime Mortgages: Foreclosure Inventory (post-1998)
Subprime Mortgages: Payments Past Due 90 Days (post-1998)
Subprime Mortgages: Foreclosures Started (post-1998)
Prime Mortgages: Foreclosure Inventory (post-1998)
Prime Mortgages: Payments Past Due 90 Days (post-1998)
Prime Mortgages: Foreclosures Started (post-1998)
Percent of Mortgages
0
2
4
6
8
10
12
14
1979-Q1
1981-Q1
1983-Q1
1985-Q1
1987-Q1
1989-Q1
1991-Q1
1993-Q1
1995-Q1
1997-Q1
1999-Q1
2001-Q1
2003-Q1
2005-Q1
2007-Q1

# On the one hand…

- We are in the middle of a panic, but…this is not 1989-91.
  - Banking system condition was otherwise in pretty good shape.
  - Banks are much better diversified (due to deregulation), and shocks are not as concentrated in banks this time.
  - Shock was of moderate size (in US, $1 trillion aggregate loss) and banks have raised over $450 billion in new private capital, which is unprecedented (predictably in preferred as well as common), as well as new public capital injections.
  - Large losses are being recognized quickly, and loans are being reintermediated quickly (banks are absorbing securitizations on the balance sheet).
  - Liquidity risks of ABCP and SIVs now probably contained.
  - Fed and Treasury are responding aggressively to failures and Libor spread problem, in interventions, in fed funds rate cuts and in unprecedented discount window operations.
  - Corporate balance sheets are strong (dividend tax cut) and there is lots of financial slack and corporate liquidity, so firms can substitute for bank credit (once panic subsides).
  - House price decline has been exaggerated by Case-Shiller, as have effects on house prices of foreclosures that keep growing.

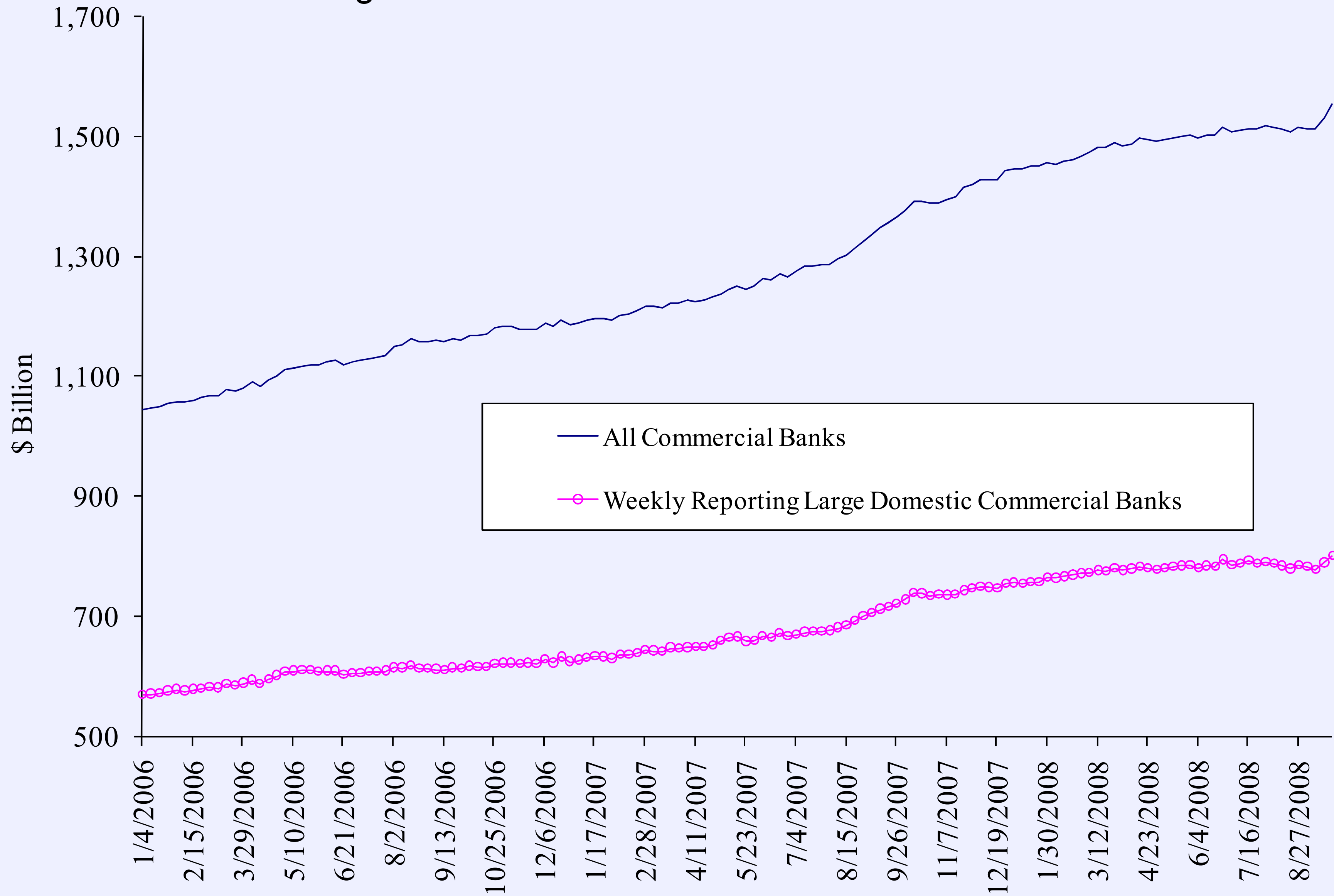


Figure 18: Commercial and Industrial Loans
$ Billion
1,700
1,500
1,300
1,100
900
700
500
All Commercial Banks
Weekly Reporting Large Domestic Commercial Banks
1/4/2006
2/15/2006
3/29/2006
5/10/2006
6/21/2006
8/2/2006
9/13/2006
10/25/2006
12/6/2006
1/17/2007
2/28/2007
4/11/2007
5/23/2007
7/4/2007
8/15/2007
9/26/2007
11/7/2007
12/19/2007
1/30/2008
3/12/2008
4/23/2008
6/4/2008
7/16/2008
8/27/2008

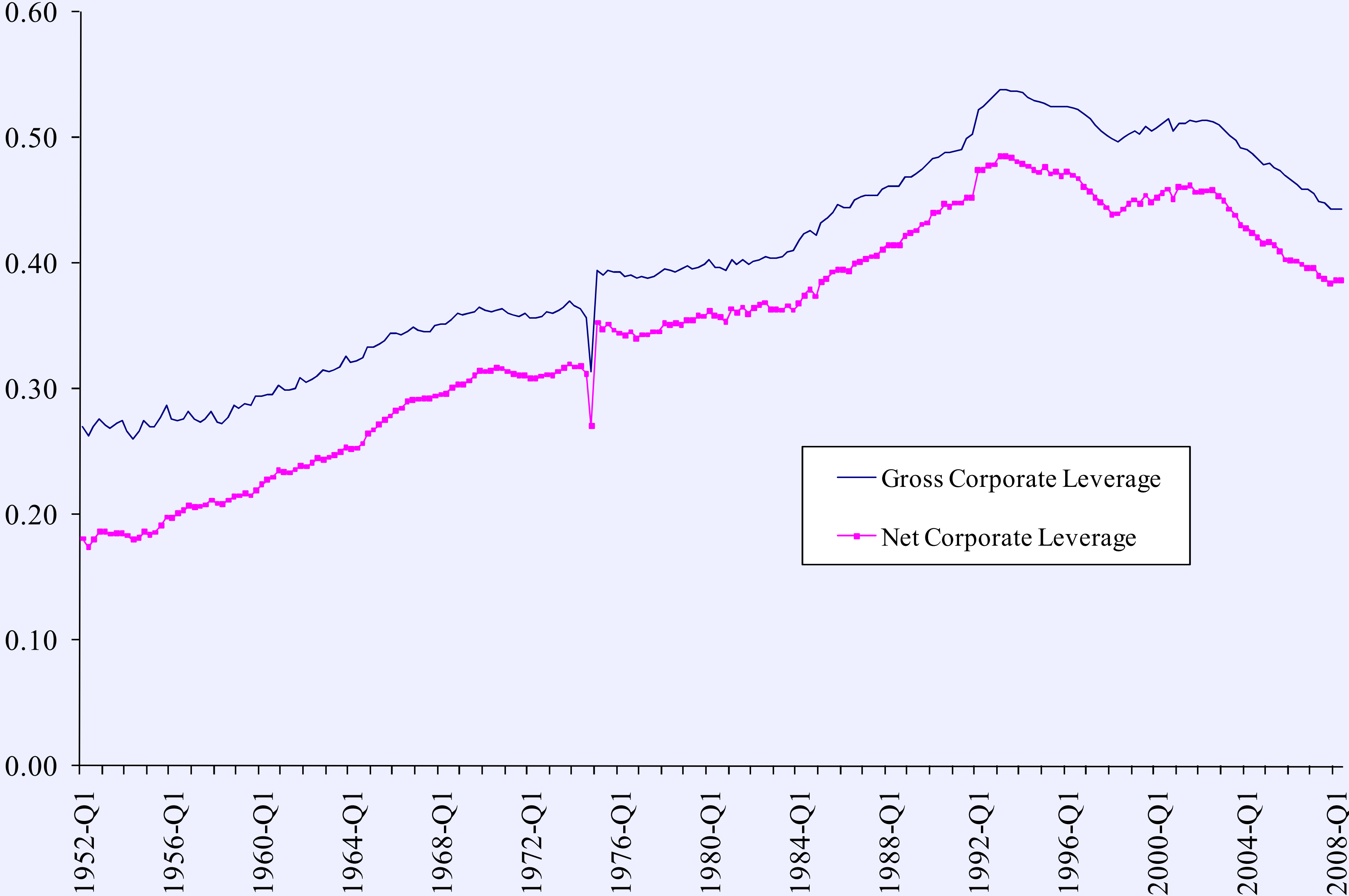


Figure 15: Corporate Leverage
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1952-Q1
1956-Q1
1960-Q1
1964-Q1
1968-Q1
1972-Q1
1976-Q1
1980-Q1
1984-Q1
1988-Q1
1992-Q1
1996-Q1
2000-Q1
2004-Q1
2008-Q1
Gross Corporate Leverage
Net Corporate Leverage

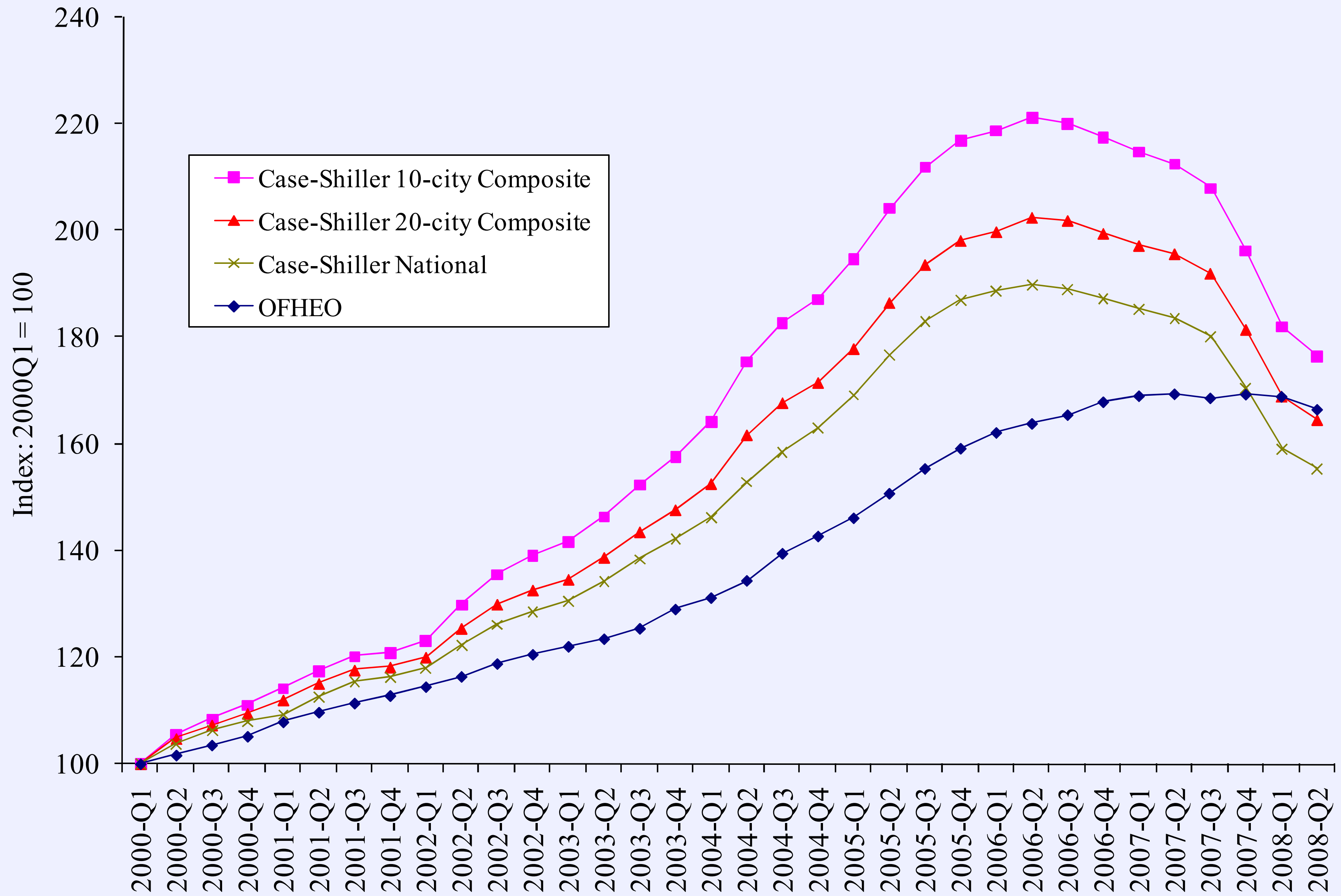


Figure 2: U.S. Home Price Appreciation
Case-Shiller 10-city Composite
Case-Shiller 20-city Composite
Case-Shiller National
OFHEO
Index: 2000Q1 = 100
240
220
200
180
160
140
120
100
2000-Q1
2000-Q2
2000-Q3
2000-Q4
2001-Q1
2001-Q2
2001-Q3
2001-Q4
2002-Q1
2002-Q2
2002-Q3
2002-Q4
2003-Q1
2003-Q2
2003-Q3
2003-Q4
2004-Q1
2004-Q2
2004-Q3
2004-Q4
2005-Q1
2005-Q2
2005-Q3
2005-Q4
2006-Q1
2006-Q2
2006-Q3
2006-Q4
2007-Q1
2007-Q2
2007-Q3
2007-Q4
2008-Q1
2008-Q2

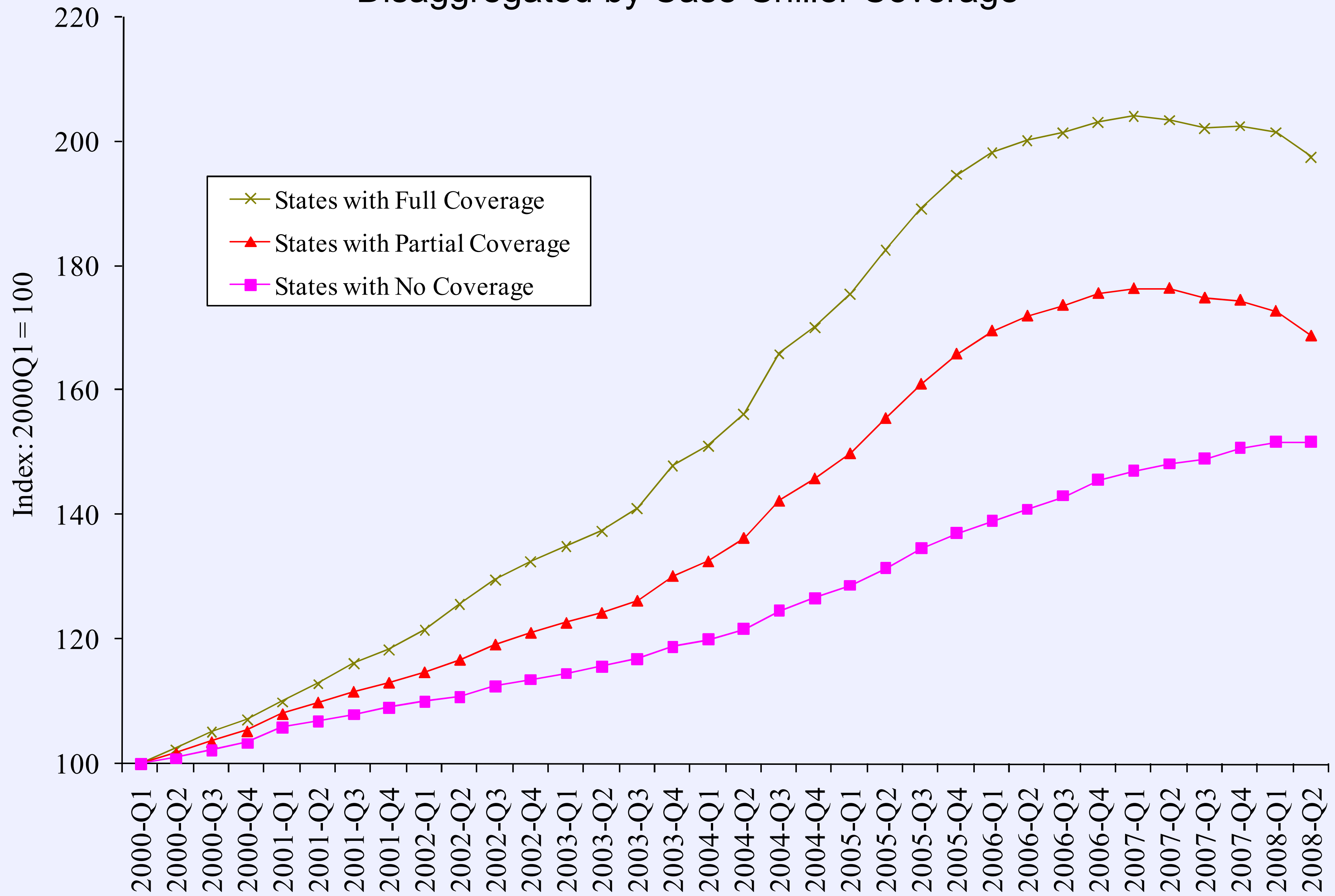


Figure 3: OFHEO HPI
Disaggregated by Case-Shiller Coverage
Index: 2000Q1 = 100
220
200
180
160
140
120
100
States with Full Coverage
States with Partial Coverage
States with No Coverage
2000-Q1
2000-Q2
2000-Q3
2000-Q4
2001-Q1
2001-Q2
2001-Q3
2001-Q4
2002-Q1
2002-Q2
2002-Q3
2002-Q4
2003-Q1
2003-Q2
2003-Q3
2003-Q4
2004-Q1
2004-Q2
2004-Q3
2004-Q4
2005-Q1
2005-Q2
2005-Q3
2005-Q4
2006-Q1
2006-Q2
2006-Q3
2006-Q4
2007-Q1
2007-Q2
2007-Q3
2007-Q4
2008-Q1
2008-Q2

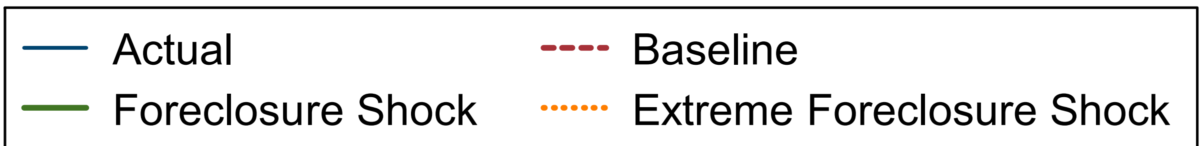
HPI Simulations for Entire U.S.

Cumulative change:

- Baseline: -0.44%
- Foreclosure shock: -4.67%
- Extreme shock: -5.47%

100
80
60
40
20

1980
1990
2000
2010



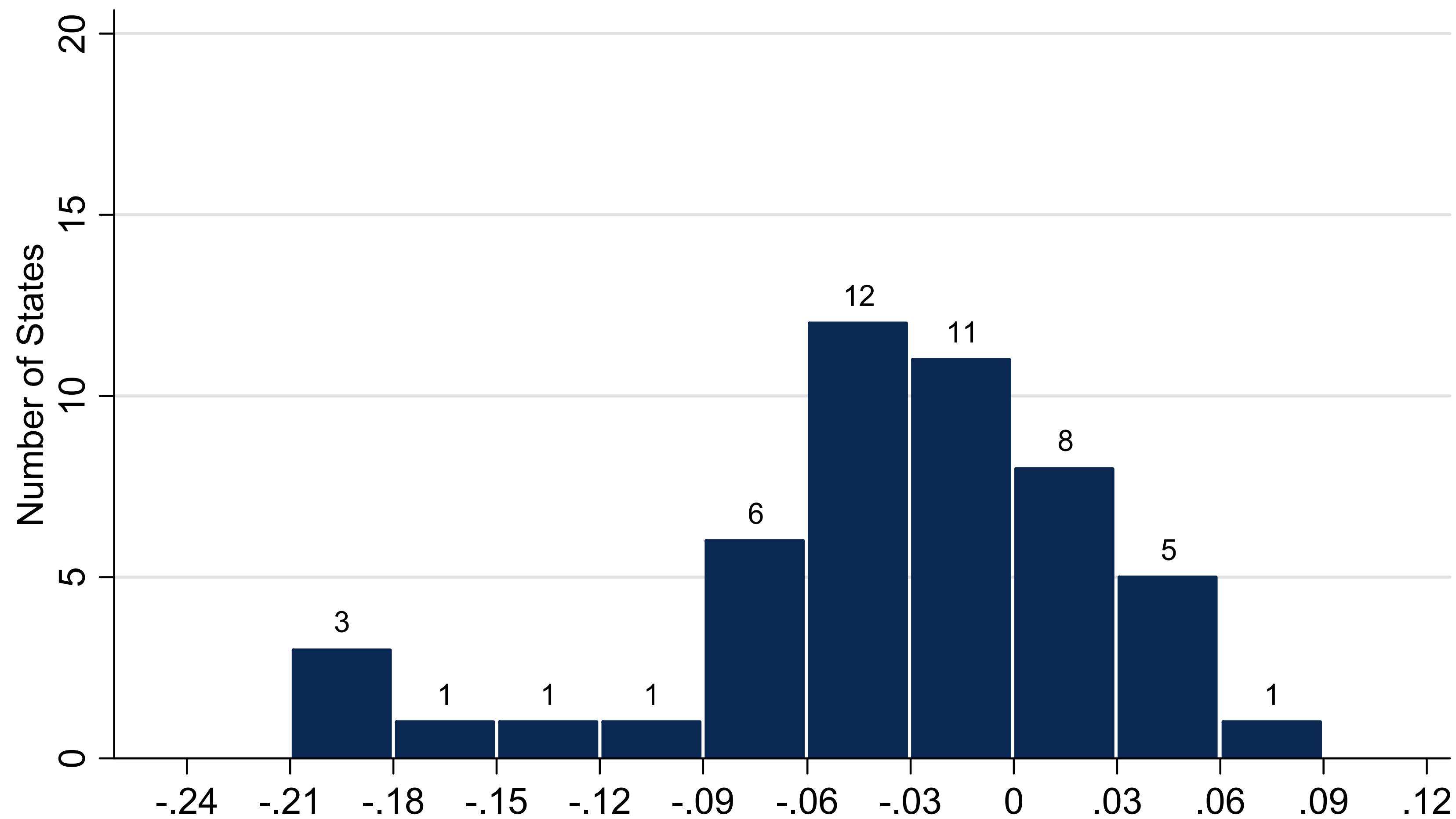


Figure 7: Distribution of Total House Price
Changes between 2007Q2 and 2009Q4
Extreme Foreclosure Shock
Number of States
0
5
10
15
20
3
1
1
1
6
12
11
8
5
1
-.24
-.21
-.18
-.15
-.12
-.09
-.06
-.03
0
.03
.06
.09
.12

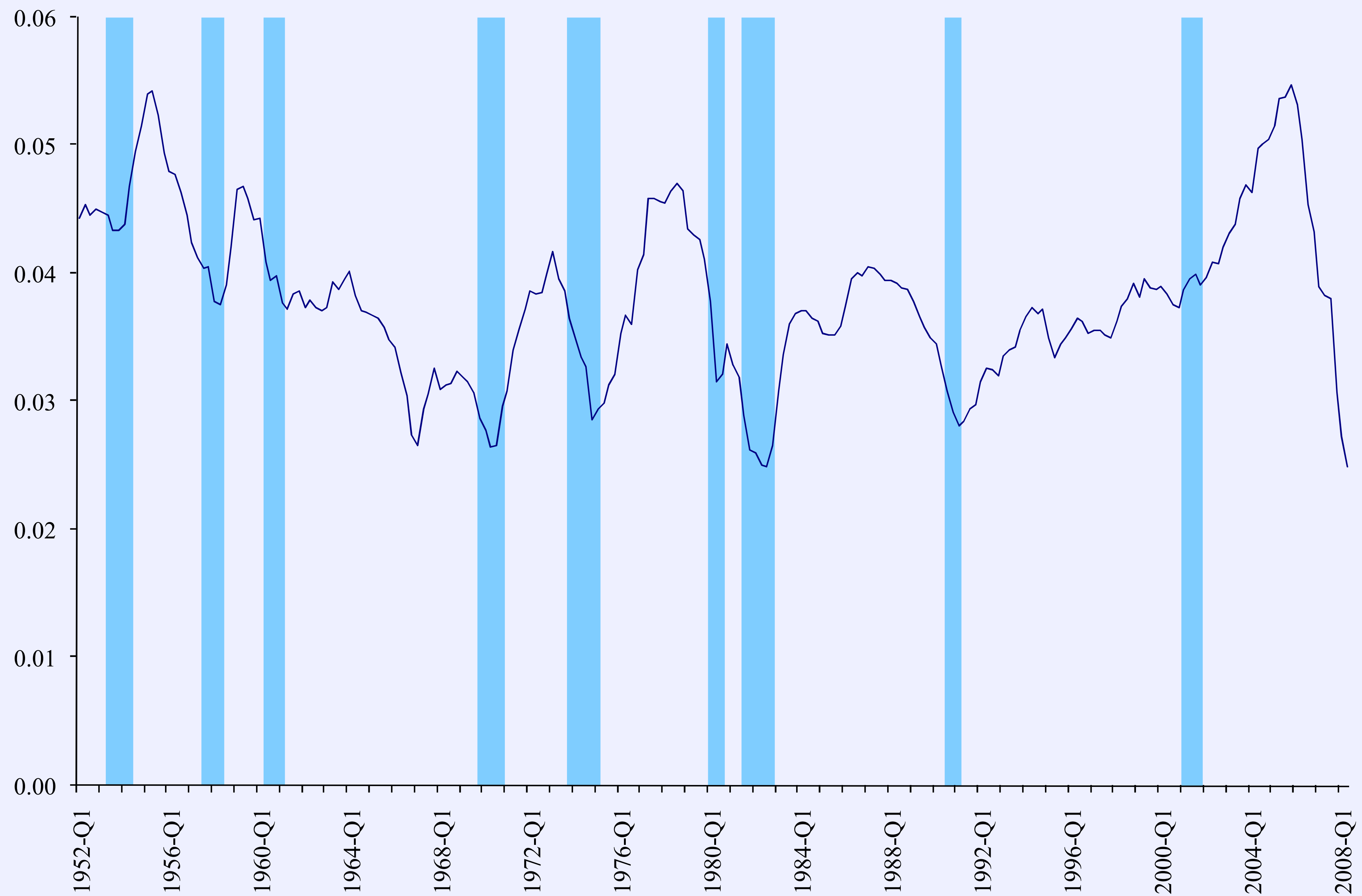


Figure 8: Residential Investment by Household Sector Relative to GDP
0.06
0.05
0.04
0.03
0.02
0.01
0.00
1952-Q1
1956-Q1
1960-Q1
1964-Q1
1968-Q1
1972-Q1
1976-Q1
1980-Q1
1984-Q1
1988-Q1
1992-Q1
1996-Q1
2000-Q1
2004-Q1
2008-Q1

# On the other hand…

- Recession began in June, still no clear loss recognition (*unprecedented* in historical experience).
- Consumers are falling out of bed, as credit crunch deepens.
- Losses are spreading outside US, and could begin to affect US financial institutions from abroad, too (especially Citibank), if global trade and finance even look fragile.
- Risks from Obama presidency in an environment of rising unemployment and falling consumption:
  - China bashing and trade collapse (China fiscal, reform costs)
  - high wage policies (union voting, min. wage, strikers)
  - limited political will to help banks (Gerard speech)
  - destructive financial regulation, micromanagement
  - continued reliance on failed Basel system
  - bringing back the GSEs
  - tax effects on growth (2% cumulative shortfall by 2012)
- Note parallels to one-two punch of 1933-1936.

# IMF Policy Panel

- What was implicit intervention rule in US and how did it change?
- In light of previous discussion of sources of crisis, what short-term policies should be followed?
- What long-term regulatory reforms should be implemented?

# Can one make sense of policy?

- Phase I: Initial shock, widening spreads and ABCP problems met by monetary policy responses.
- Phase II: March-September 18 2008, bottom falls out (Bear, F&F, etc.). Intervention rule: punishment and ring fencing.
- Phase III: First comprehensive approach.
- Phase IV: Post-November 13 approach.

# Short-Term Responses Evaluated

**Crisis Management**

- **Fed policy:** Appropriately aggressive, involves many new facilities, targeting of money markets, etc.
- **New asset purchase plan is flawed:** Pricing problem, mgt. problem, little bang for buck.
- **Preferred stock injections:** Used in 1930s in US, in Finland in 1990s. Seniority protects taxpayers and crowds in private offerings of common (if implemented properly). It has not been implemented properly (warrants, common stock dividends because of stigma nonsense).
- **Foreclosure relief**: Taxpayer proportional loss sharing.
- **Target mortgage market:** For healthy mortgages, refinance at low rates. Guarantee minimum price.
- **Prevent Collapse of Global Trade:** This has immediate benefits for US financial markets and institutions, as well as benefits to global output and trade going forward.

# Regulatory Policy

- Large consensus among academics on need to combine market information with reg/sup process (Calomiris and Powell on Argentina, Shadow Cmts.)
- Main Motive: Political economy agency problem must be taken into account explicitly:
  - Regs do not come from optimization models, but rather from political process in which politicians are agents for citizens. **Deposit insurance is suboptimally generous (very large literature). Politicians will fight economic objectives that limit bailouts.**
  - Basel is a political process designed to permit banks to avoid discipline (**regulators are often captured**).
  - Supervisors and regulators write and enforce rules acting as agents for citizens, subject to particular incentive distortions. **They will often miss problems (low talent or effort) or choose to underreport problems (incentives from bosses)**.
  - Regulatory and supervisory rules have to be politically robust, as well as economically sensible.

# Regulatory Policy (cont’d)

- **Bank regulatory response:** (a) get rid of reliance on ratings and models; bureaucratic fixes will not work, (b) incorporate real market discipline via a minimum sub debt requirement (carefully crafted) rather than ratings and models (skin in the game is essential), (c) raise and substantially vary over the cycle minimum capital ratio on a phased in basis. (Note Kashyap-Rajan-Stein agency problem of setting level in normal times too high).

  (Note ideas on how to **use spreads**, and evidence on usefulness of sub debt rule: Fed study 1999, Barth-Caprio-Levine, Dermirguc-Kunt and Calomiris-Powell and others work on debt market discipline; Segoviano work on CDS spreads.)
- **Reform OTC disclosure and accounting:** This would encourage more exchange based trading, which would help transparency and risk management.
- **Wind Down GSEs:** Fannie / Freddie should be credibly privatized. FHLBs risk also high ($51 billion of Countrywide’s $100 billion in assets), possible asset stripping of FDIC.
- **Macro Prudential Regulation**: Spain’s and Colombia’s examples.