Not (Yet) a Minsky Moment

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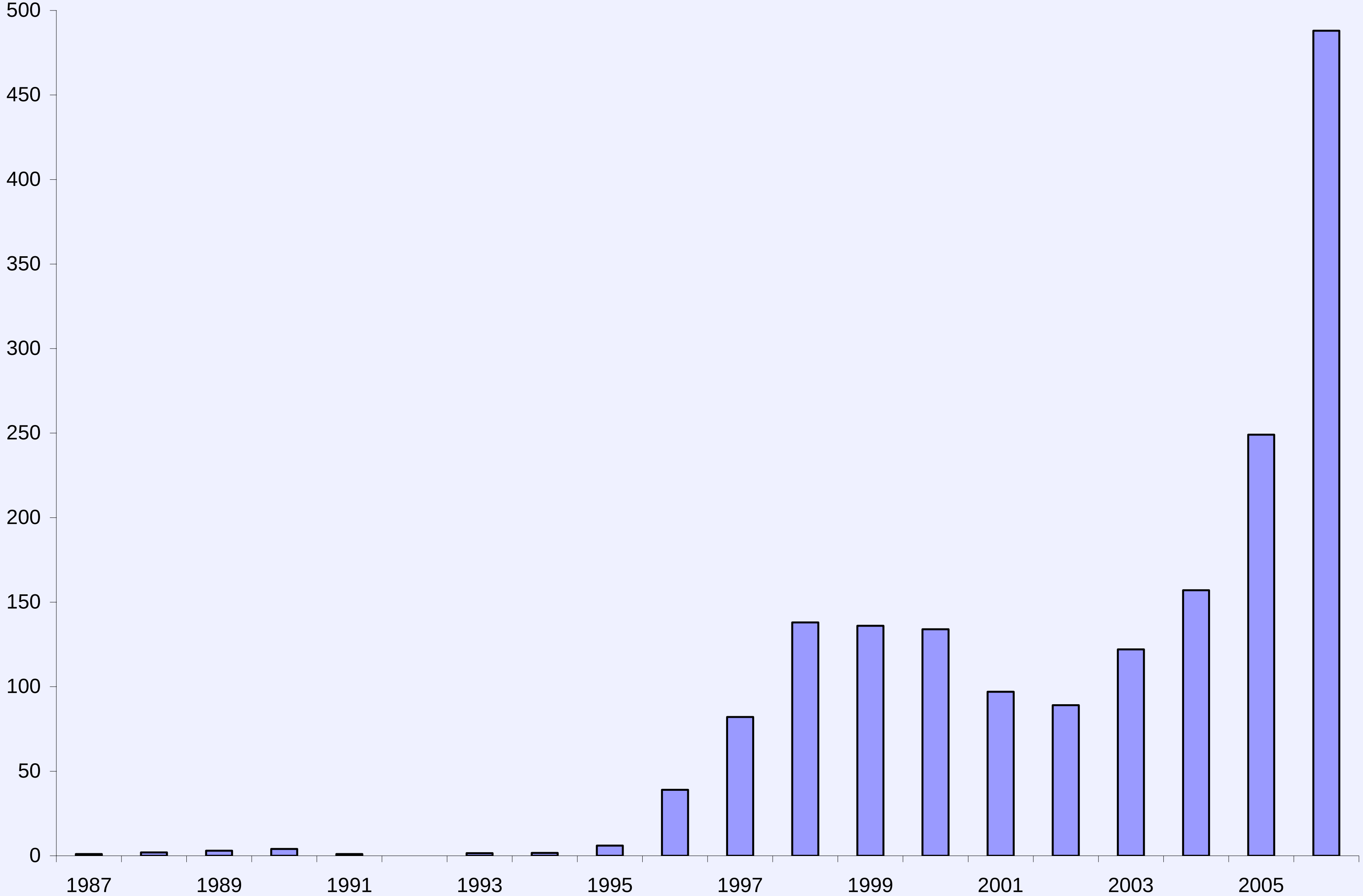
What Happened?

- Ex ante (predictably) imprudent lending and imprudent pricing and rating of risks. (LGD 6% for subprime, CDO defaults prior to 2005).
- Subprime credit collapse, but a broader investment problem than that (Landesbanken)
- MBS => CDO => LSS => ABCP
- ABCP and SIVs => Banks, MMMF, IBs
- Bear Stearns had 33 to 1 gearing, financed with overnight repos, opaque and illiquid assets many of which were connected to subprime shocks (it was not insolvent on March 17, but one cannot maintain access to money markets at elevated levels of risk).
- Libor elevated (adverse selection costs)
- Higher default risk pricing
- Collapse of confidence in securitization
  - Ratings agencies underestimated risks
  - Agency problems of brokers, banks, ratings

Figure 1: Annual Cash CDO Issuance



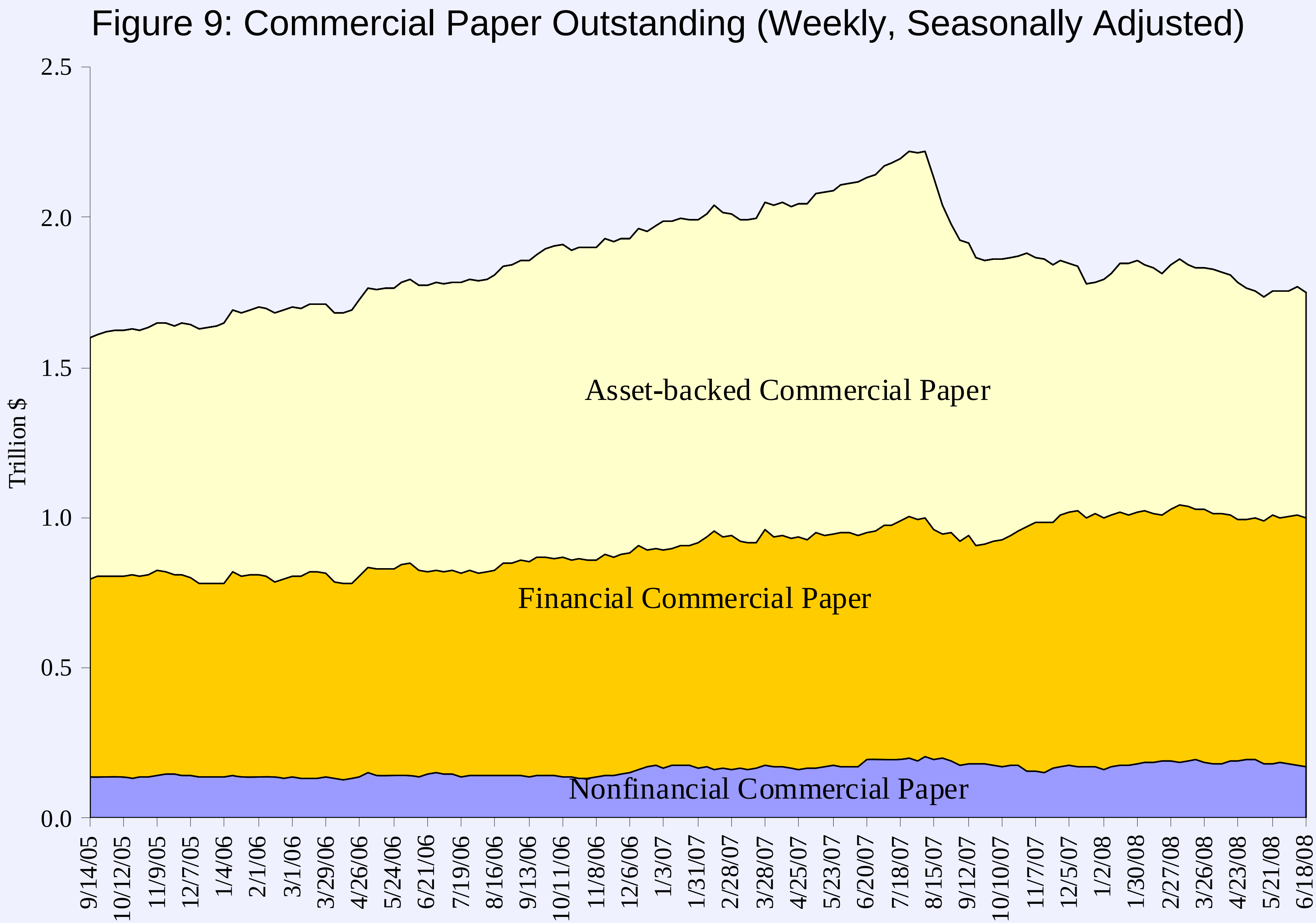
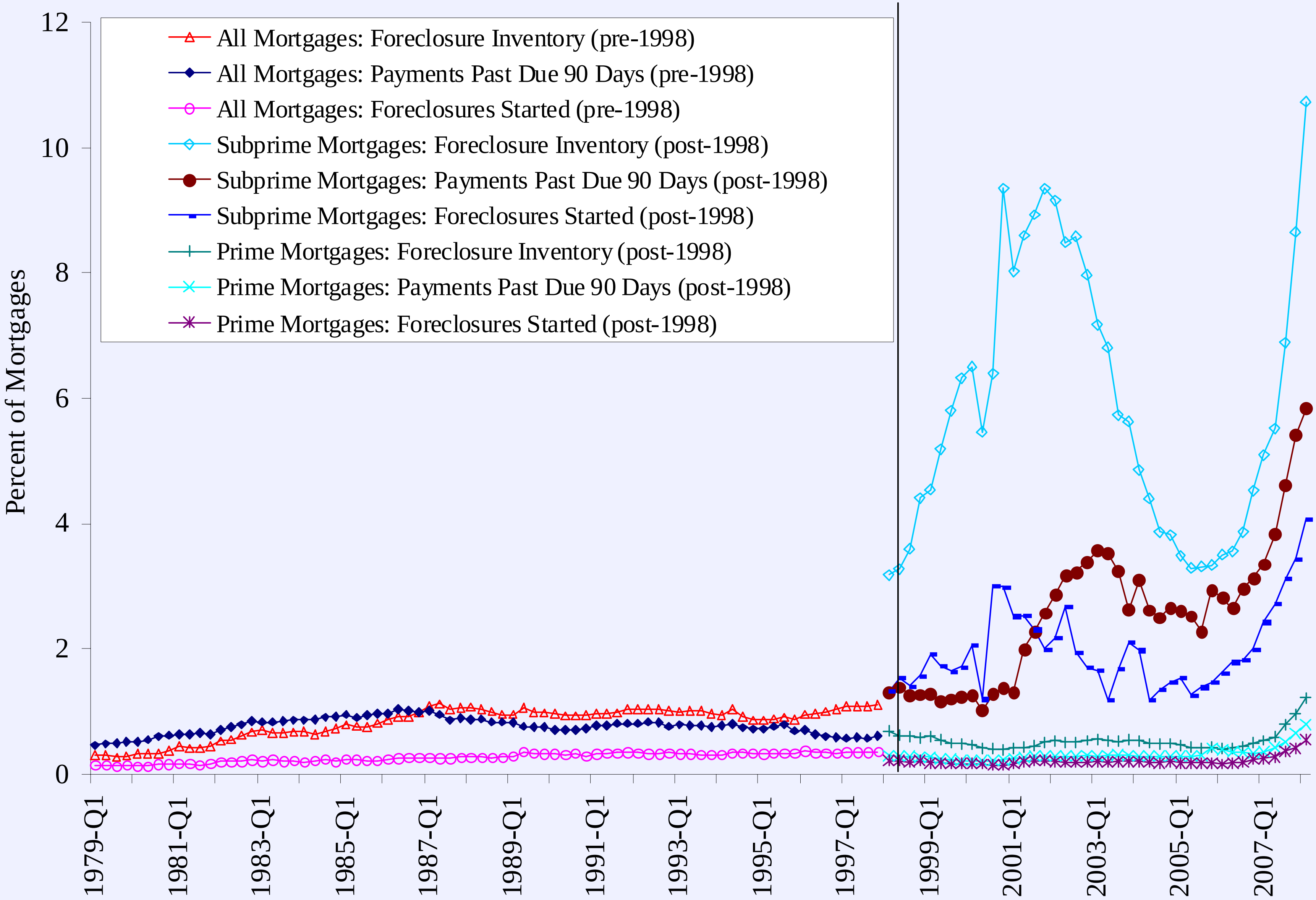


Figure 9: Commercial Paper Outstanding (Weekly, Seasonally Adjusted)
Trillion $
2.5
2.0
1.5
1.0
0.5
0.0
Asset-backed Commercial Paper
Financial Commercial Paper
Nonfinancial Commercial Paper
9/14/05
10/12/05
11/9/05
12/7/05
1/4/06
2/1/06
3/1/06
3/29/06
4/26/06
5/24/06
6/21/06
7/19/06
8/16/06
9/13/06
10/11/06
11/8/06
12/6/06
1/3/07
1/31/07
2/28/07
3/28/07
4/25/07
5/23/07
6/20/07
7/18/07
8/15/07
9/12/07
10/10/07
11/7/07
12/5/07
1/2/08
1/30/08
2/27/08
3/26/08
4/23/08
5/21/08
6/18/08

Why did this happen?

- Peak of subprime foreclosure rate, by some measures, was over six years ago! Why did issuance and use in securitization accelerate?
- Losses then were small, owing to rapidly rising home prices, and ratings agencies built optimistic LGD into scenarios. That was idiotic, and produced a doubling of originations of subprime from 2003 to 2005.
- Novelty of CDOs, LSSs, SIVs, combined with grade inflation by ratings agencies (what does BBB mean?), and fee-driven incentives likely produced confusion about true risk.
- High liquidity and low yields, along with a long period without turmoil encouraged money managers to search for high yields and underestimation of risk (agency?).
- This sort of myopia is, indeed, Minskyesque! But a true Minsky moment is more – a financial crisis that produces a severe macro decline. Will this happen?



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
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

Macroeconomic Consequences?

- Financial system and credit supply
  - Banks and others must absorb losses, reintermediate lending, raise capital to expand capacity to grow, as needed; if the capacity of banks to supply credit, and the capacity of firms to raise credit directly, is inadequate, then it is possible to experience a severe credit crunch like 1989-91.
  - Elevated Libor spreads mean that monetary policy must lower Fed funds more than it would otherwise have to, in order to keep market interest rates from rising.
  - Higher credit spreads are inevitable, but if they remain exaggerated on the positive side could discourage borrowing.
- Housing prices
  - If housing was in a bubble that just burst, prices could fall dramatically; any collapse in credit affecting housing and/or consumers could aggravate that decline.
- Economic activity
  - The combination of a credit crunch, and the wealth effects of housing price declines on consumption, could tip us into a recession.

Financial System and Credit Supply

- This is not 1989-91.
  - Banking system condition is good (losses will likely amount to two missing quarters of earnings in the worst case, which is Citi).
  - 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 are now reasonably contained for US banks.
  - Banks are much better diversified (due to deregulation), and shocks are not as concentrated in banks this time.
  - Banks are not having trouble raising tier 1 capital (predictably in the form of preferred as well as common).
  - Fed is responding aggressively to Libor spread problem, both 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.

Figure 18: Commercial and Industrial Loans

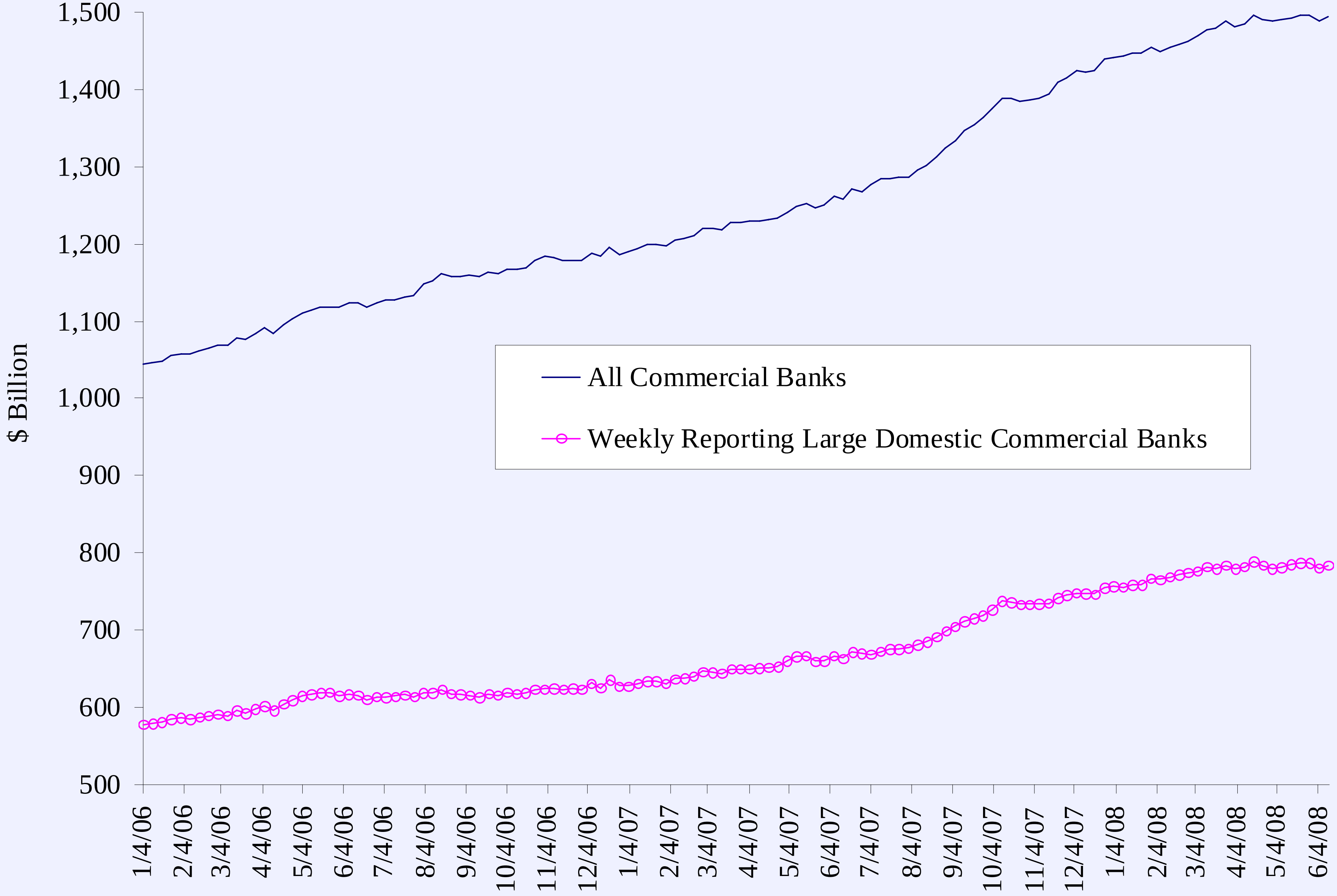
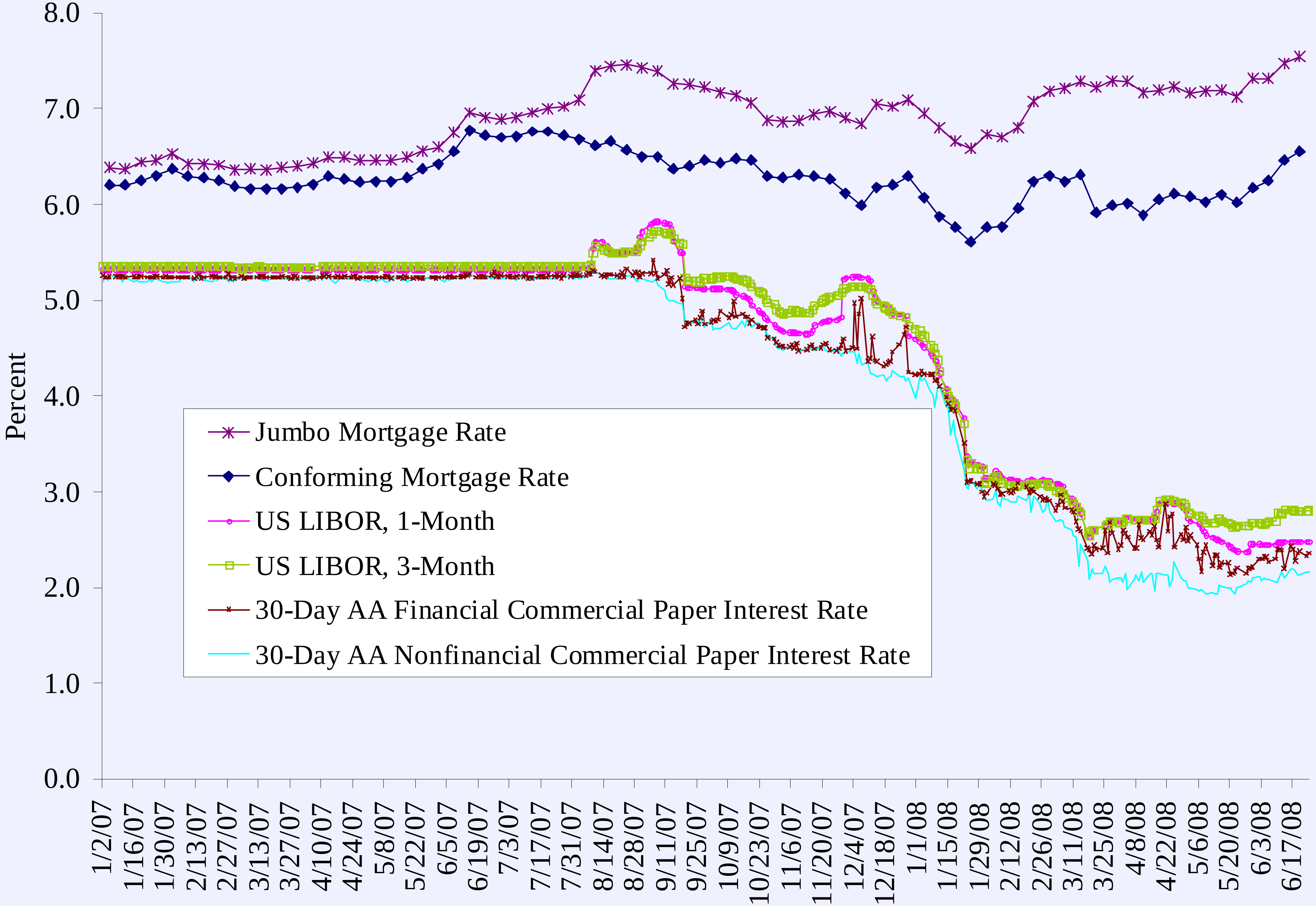


Figure 10: Commercial Paper Rates, LIBOR, and Mortgage Rates



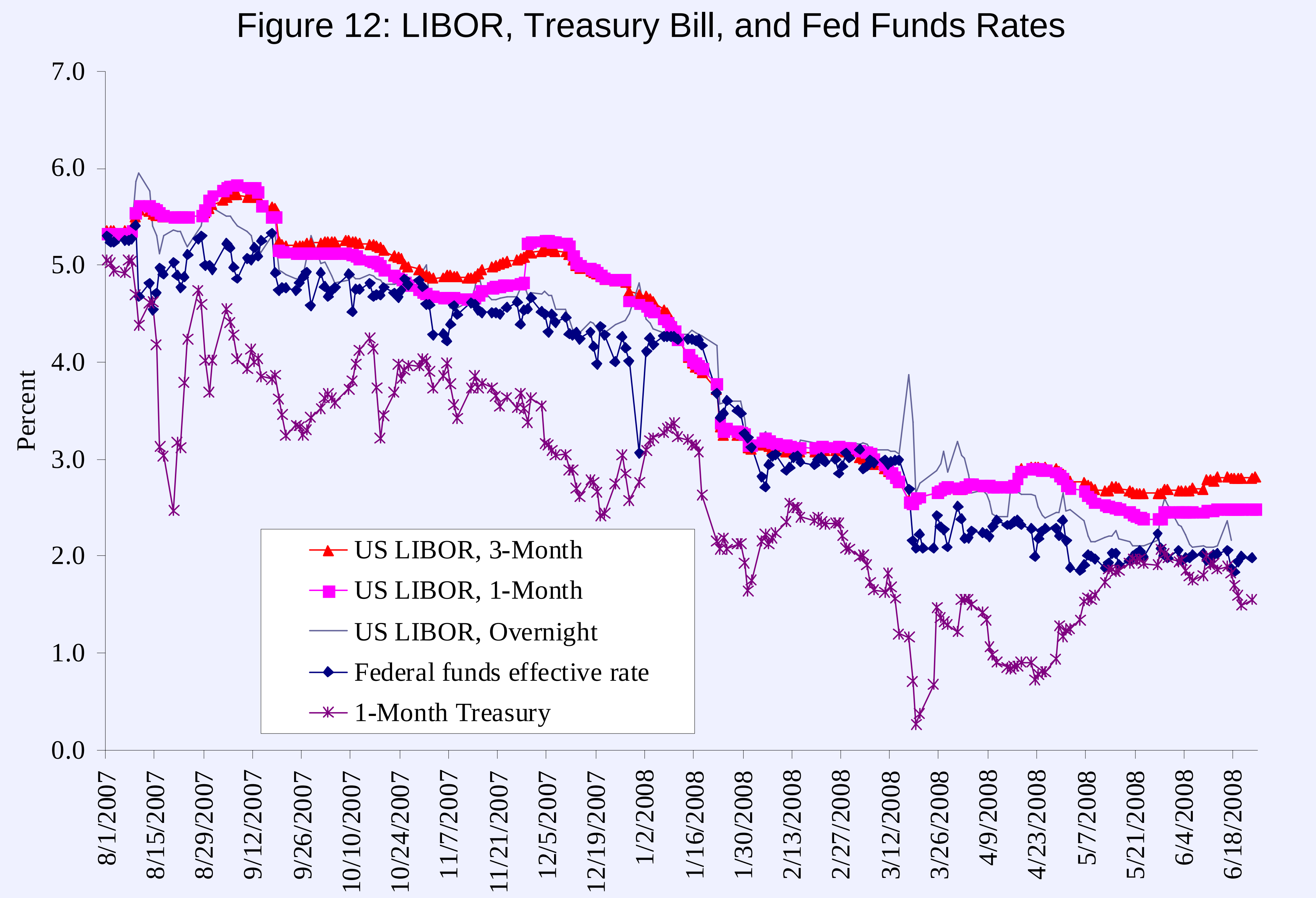


Figure 12: LIBOR, Treasury Bill, and Fed Funds Rates
Percent
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
US LIBOR, 3-Month
US LIBOR, 1-Month
US LIBOR, Overnight
Federal funds effective rate
1-Month Treasury
8/1/2007
8/15/2007
8/29/2007
9/12/2007
9/26/2007
10/10/2007
10/24/2007
11/7/2007
11/21/2007
12/5/2007
12/19/2007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

Figure 13: Overnight Libor-Fed Funds Spread

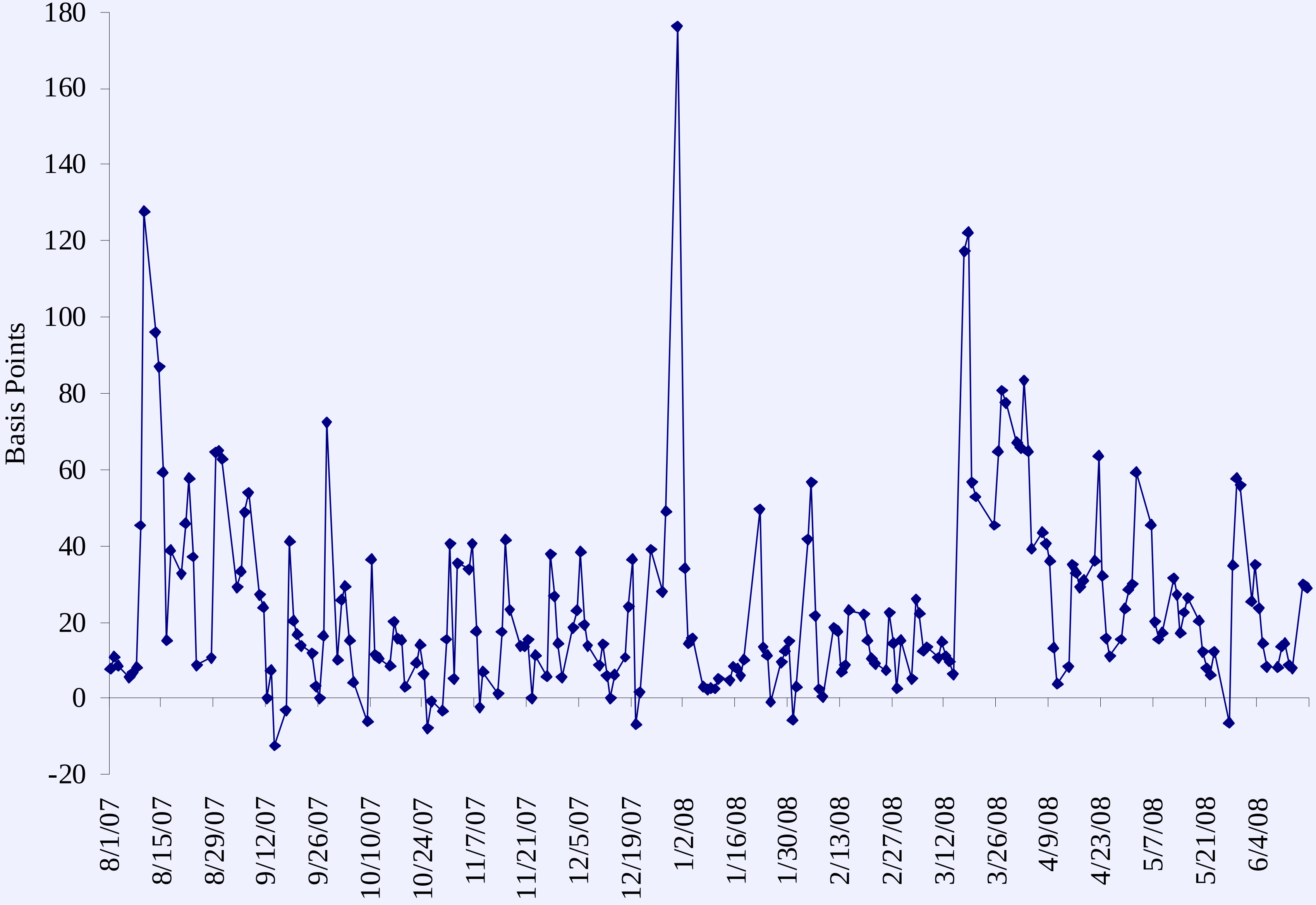
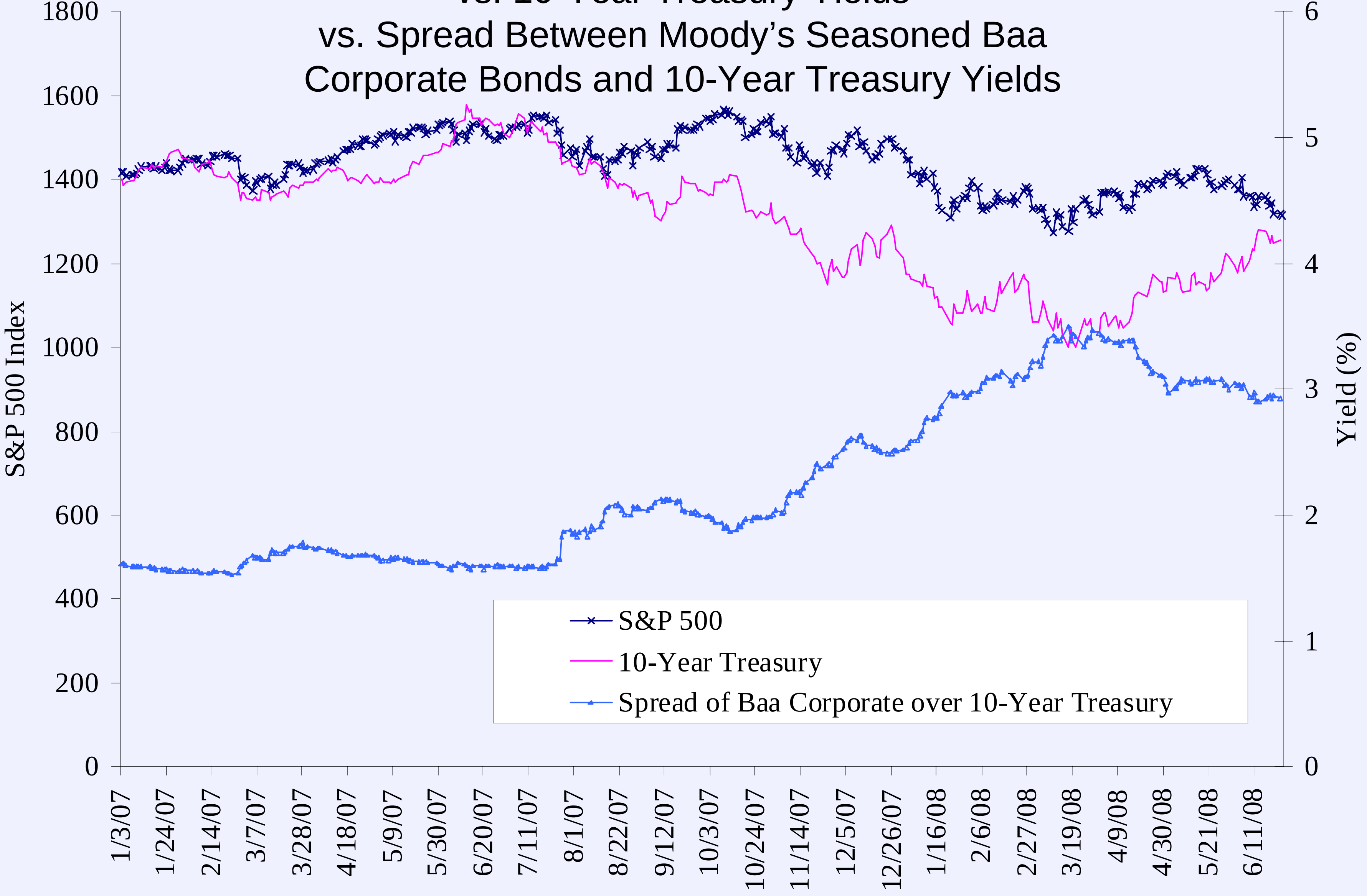


Figure 14: S&P 500 vs. 10-Year Treasury Yields vs. Spread Between Moody's Seasoned Baa Corporate Bonds and 10-Year Treasury Yields



USD Swap Spread 10-Yr

Credit Market Indicators

Credit Indicator	*March 2008 Peak*	*Current*	*Change (BPS)*	*Historical Avg.*
Swap Spread, BPS	91.3	70	-21.3	56 bps
Credit Default Swap Spread, BPS	192.52	131	-61.5	102 bps
Fannie Mae Spread, BPS	237	181	-56.0	125 bps
TED Spread, BPS	204	92	-112.0	56 bps
Paper-Bill Spread, BPS	155	-2	-157.0	23 bps
Asset-Backed Spread, BPS	284	57	-227.0	33 bps
Emerging Market Spread, BPS	378	318	-60.0	671 bps
Junk Bond Spread, BP	815	632	-183.0	550 bps

Source: Bloomberg; MKM Partners

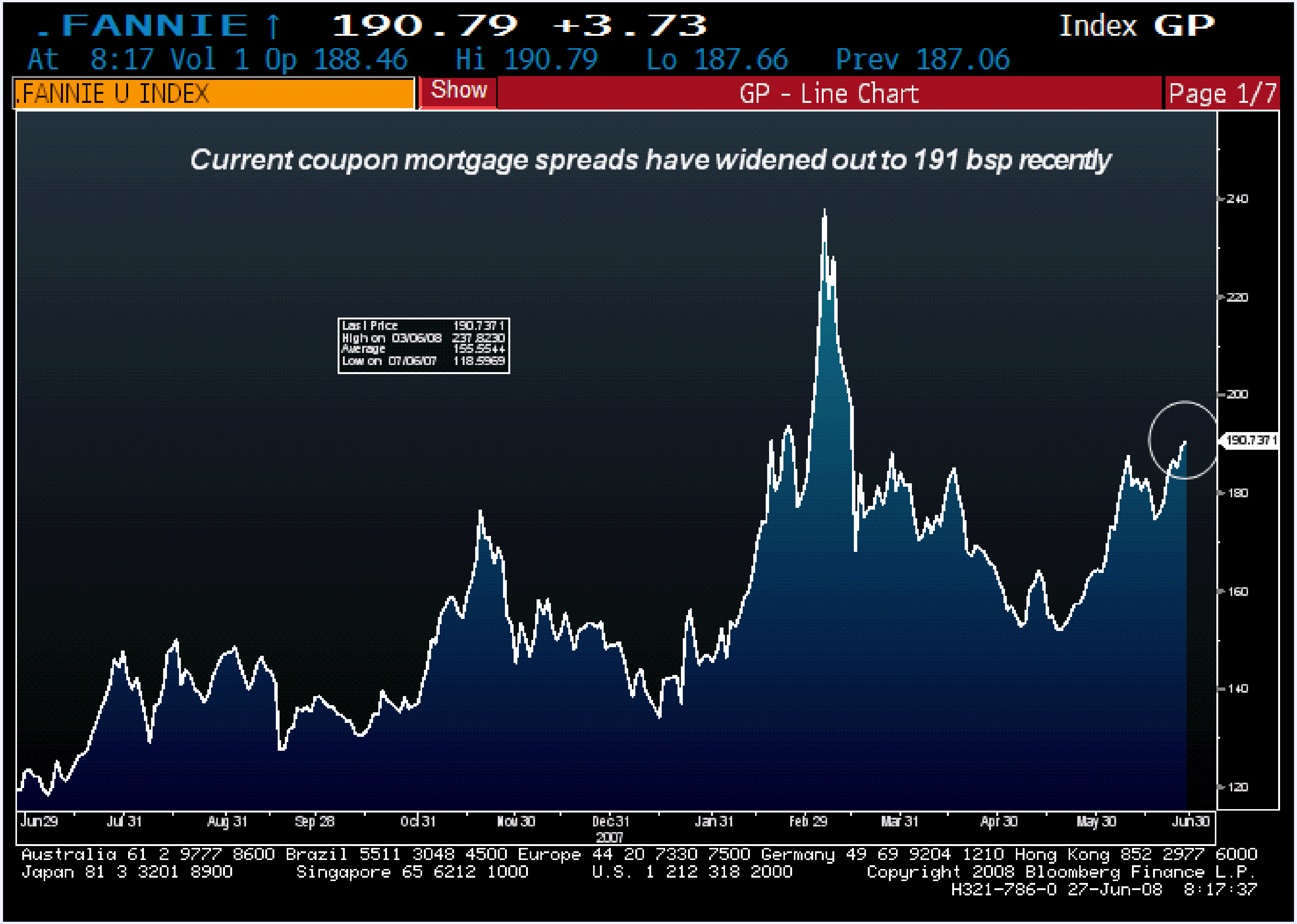

.FANNIE ↑ 190.79 +3.73
Index GP
At 8:17 Vol 1 Op 188.46 Hi 190.79 Lo 187.66 Prev 187.06
.FANNIE U INDEX
Show
GP - Line Chart
Page 1/7
Current coupon mortgage spreads have widened out to 191 bsp recently
Last Price 190.7371
High on 03/06/08 237.8230
Average 155.5544
Low on 07/06/07 118.5969
240
220
200
190.7371
180
160
140
120
Jun 29
Jul 31
Aug 31
Sep 28
Oct 31
Nov 30
Dec 31
2007
Jan 31
Feb 29
Mar 31
Apr 30
May 30
Jun 30
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2008 Bloomberg Finance L.P.
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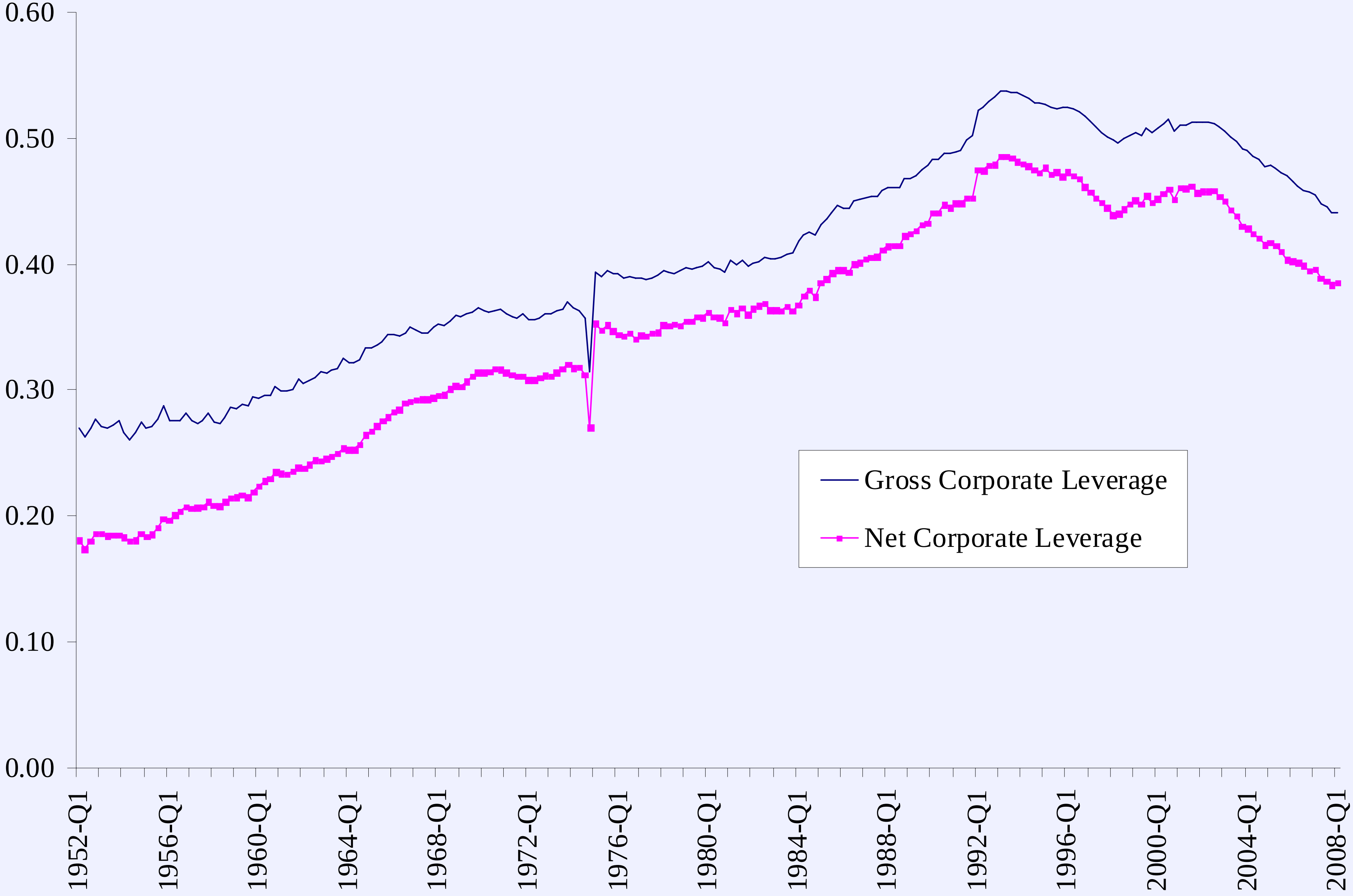
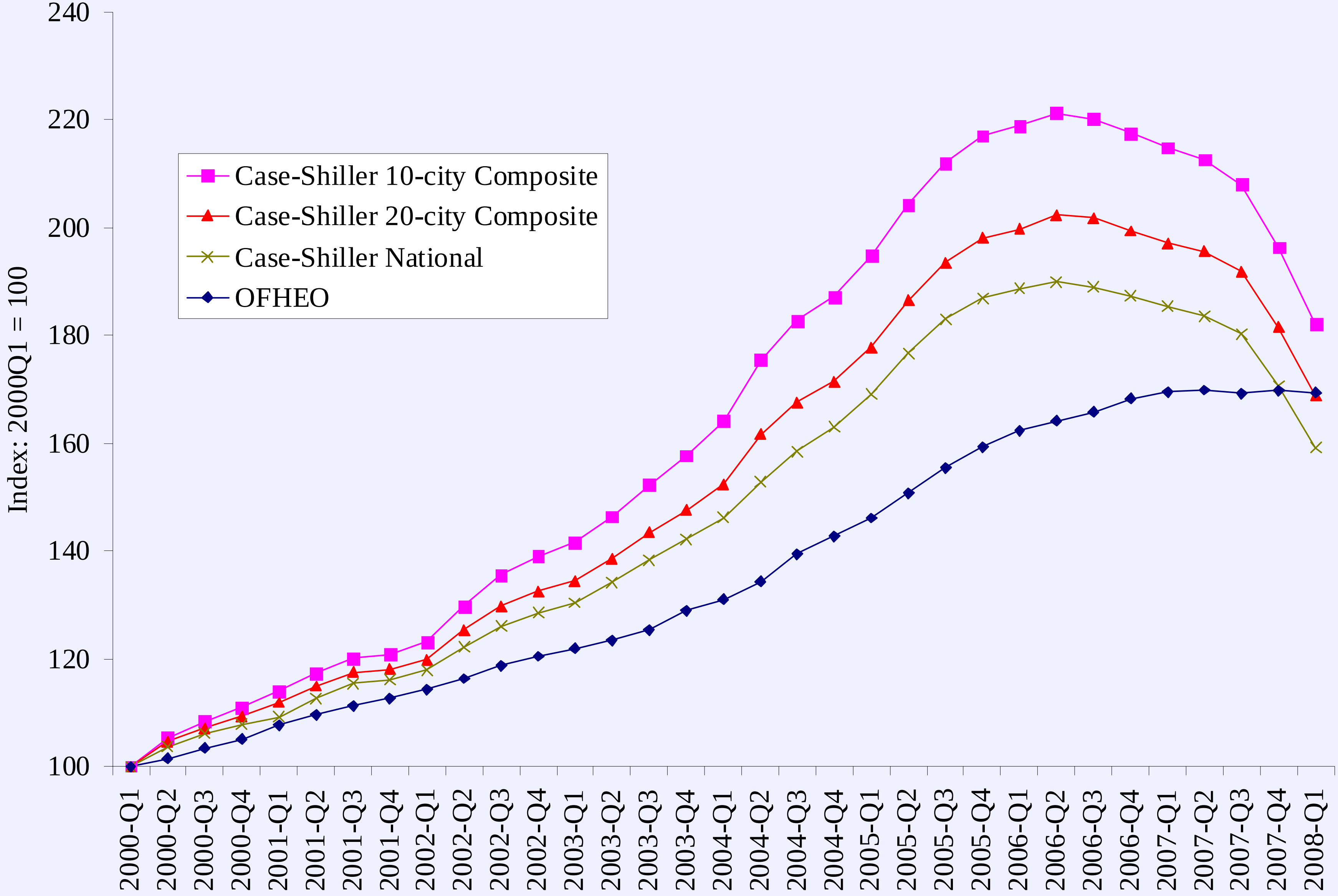
Figure 15: Corporate Leverage



Housing Prices

- Perceptions are based on flawed data (median sales prices, or Case-Shiller index)
- There was no national housing bubble. The bubble was confined to a few locations, which are now troubled (Florida, Arizona, Nevada, parts of California). Other troubled spots have been in secular housing decline (Ohio and Michigan).
- Housing sales are way down, but this is true even in persistently booming markets (Seattle and Austin), and reflects a pause in buying, I believe, for the dust to settle. In the Spring, sales are likely to grow (they already have). There is no existing evidence in the literature of strong predictive content of sales for prices.
- Housing has already been in a recession for a year.
  - This has reduced starts, which going forward will provide some support for housing prices.
- Foreclosures will have little effect on prices; prices nationwide likely will be flat through 2009.

Figure 2: U.S. Home Price Appreciation



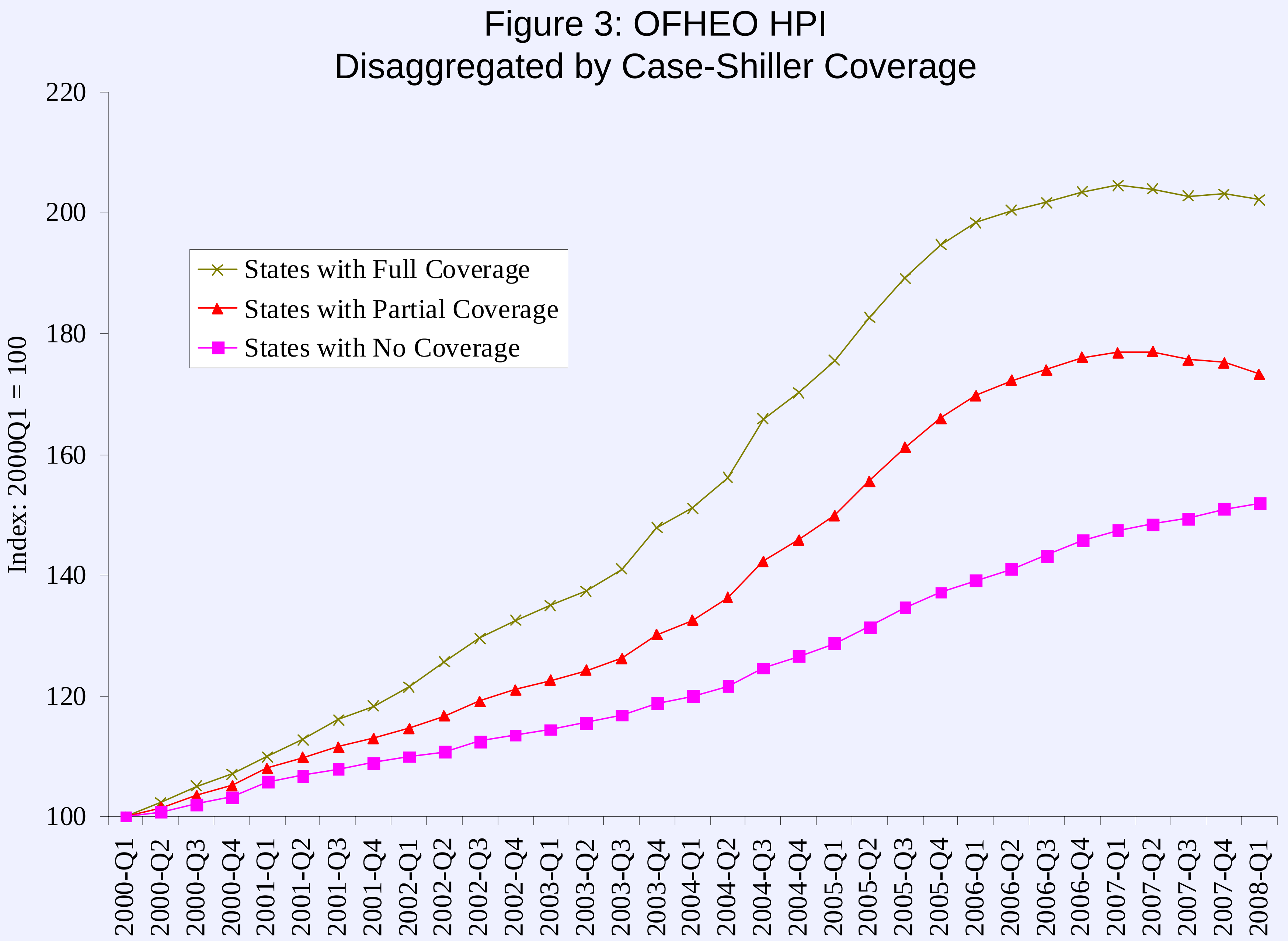
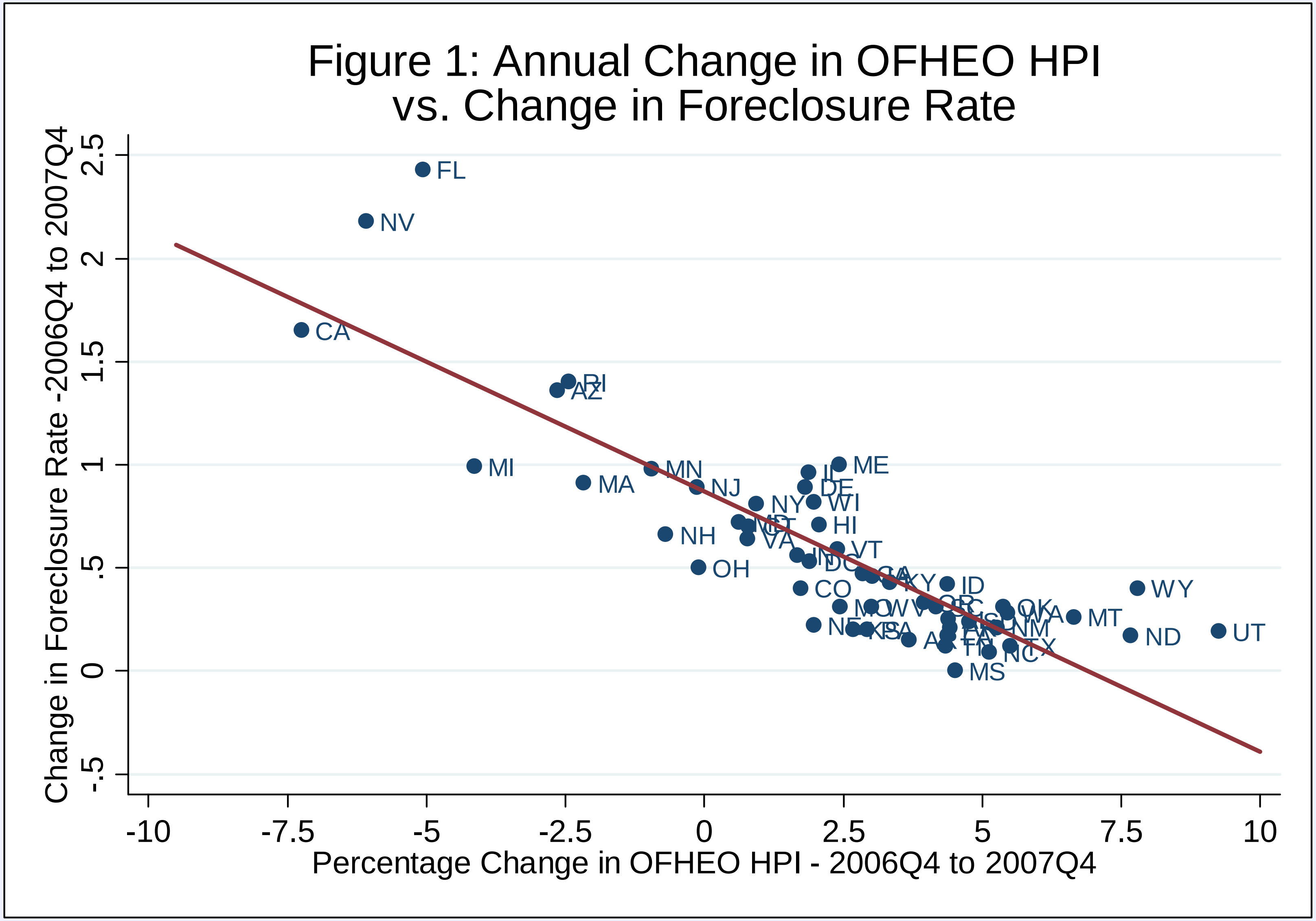


Figure 3: OFHEO HPI
Disaggregated by Case-Shiller Coverage
Index: 2000Q1 = 100
220
200
180
160
140
120
100
States with Full Coverage
States with Partial Coverage
States with No Coverage
2000-Q1
2000-Q2
2000-Q3
2000-Q4
2001-Q1
2001-Q2
2001-Q3
2001-Q4
2002-Q1
2002-Q2
2002-Q3
2002-Q4
2003-Q1
2003-Q2
2003-Q3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

State-Level Annual Home Price Appreciation (OFHEO) vs.
State-Level Changes in Foreclosure Inventory Rates
(Foreclosures growth regression coefficient = –0.126, R-squared 0.72.,)



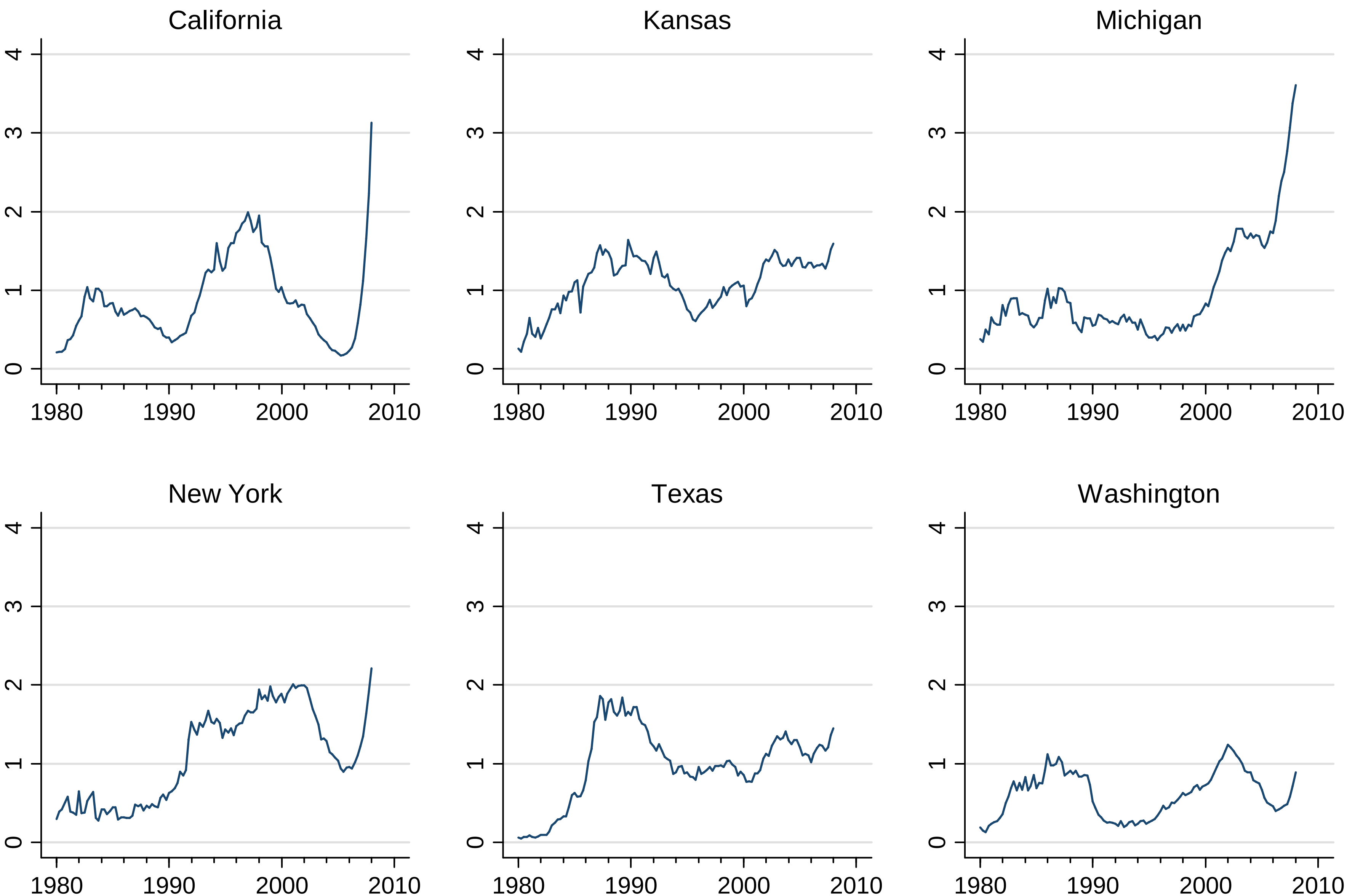
Foreclosures and House Prices

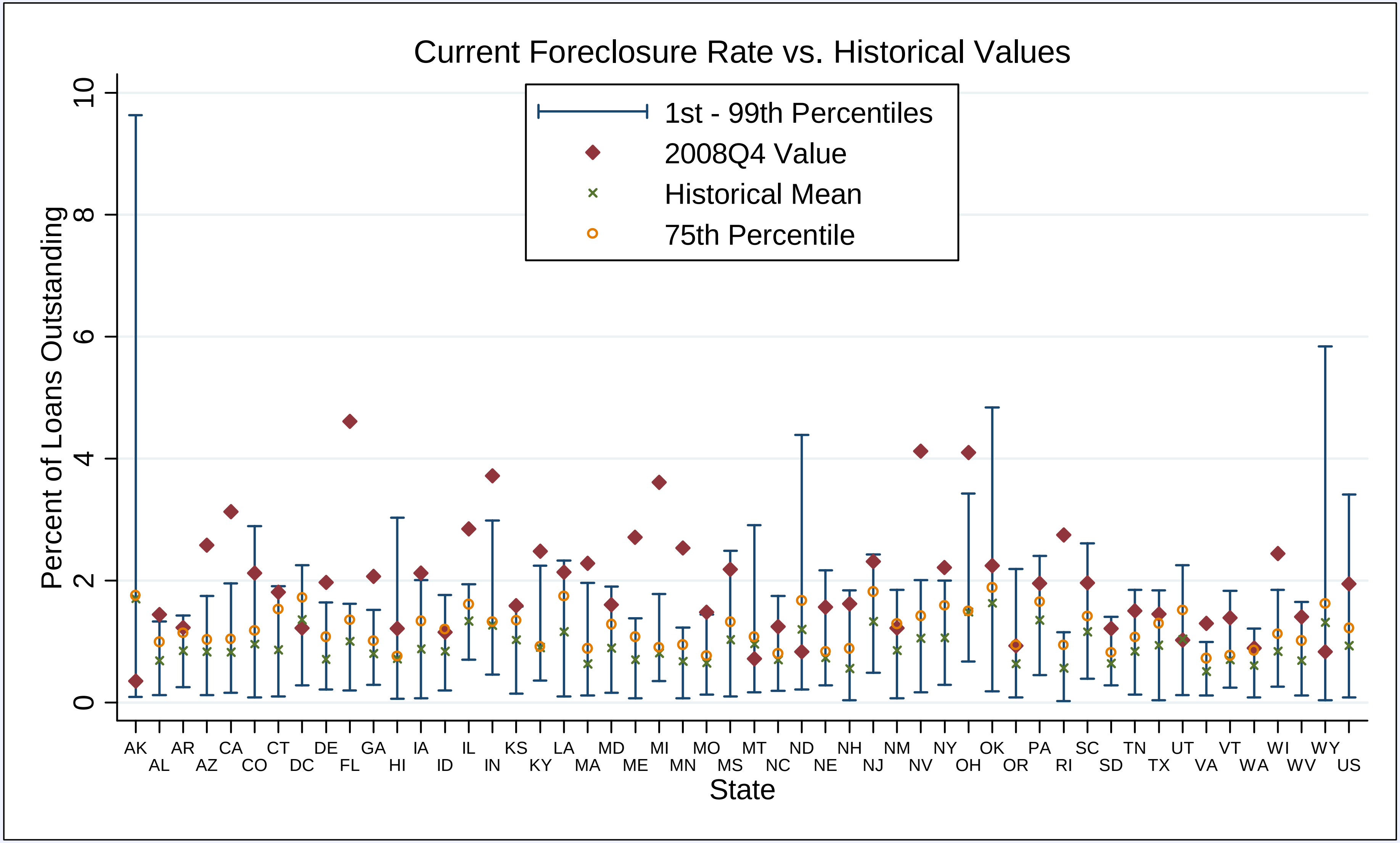
- Major policy initiatives are under consideration to mitigate foreclosures, largely due to concern that foreclosures boom will cause price collapse, consumption decline, and recession
- 2.47% of all mortgages were in foreclosure in 2008Q1 (MBA data)
  - Highest level on record
  - The foreclosure rate is only expected to rise in the coming year
- What impact will this have on house prices?

Foreclosures and House Prices

- The relationship in Figure 1 reflects a combination of three influences
  - Responses of prices to foreclosure shocks
  - Responses of foreclosures to price shocks
  - Responses of both to shocks originating in other variables
- To what extent will ongoing mortgage market distress affect housing prices?

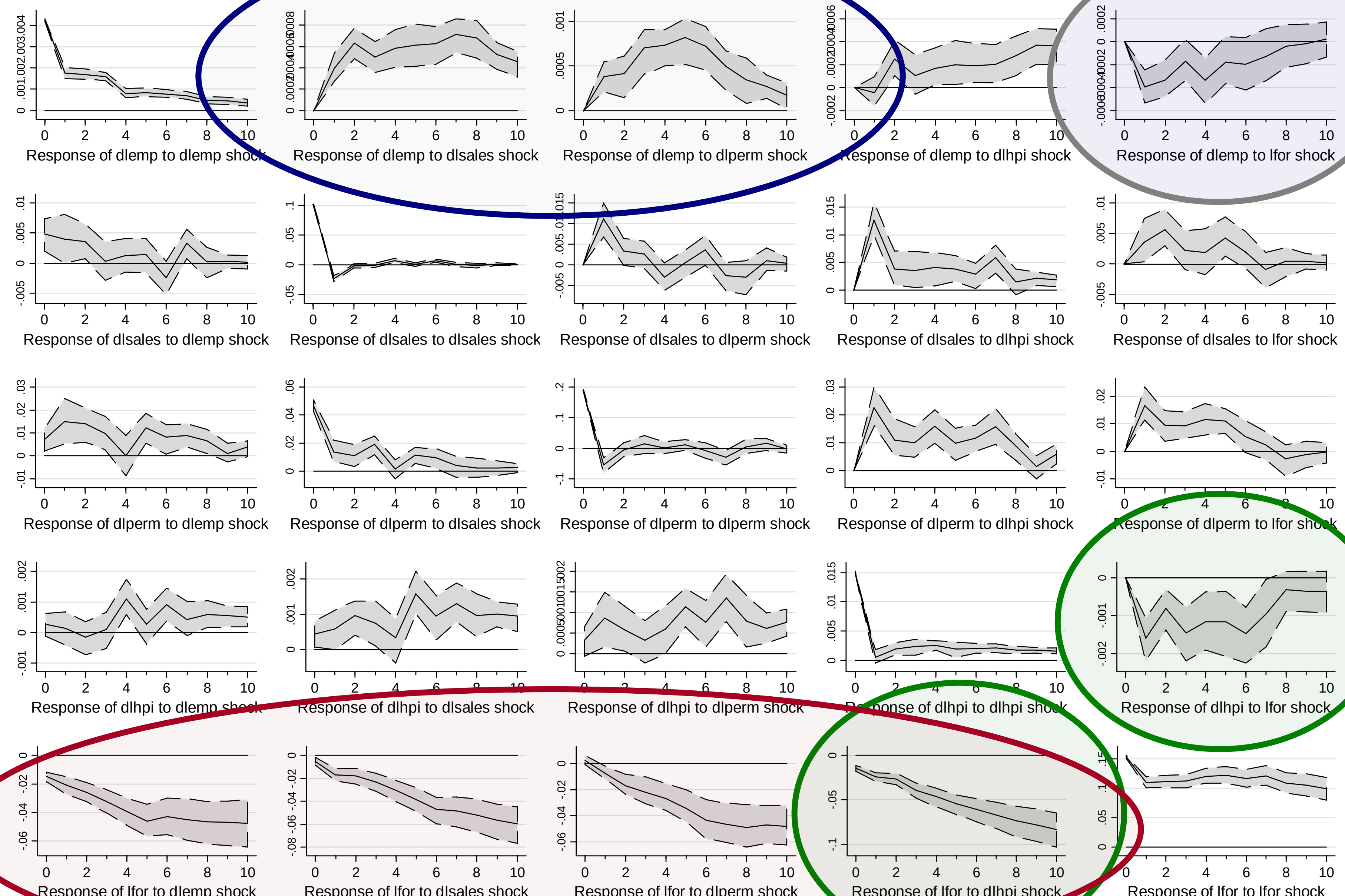
Figure 3 - Panel B: Foreclosure Rate in Selected States

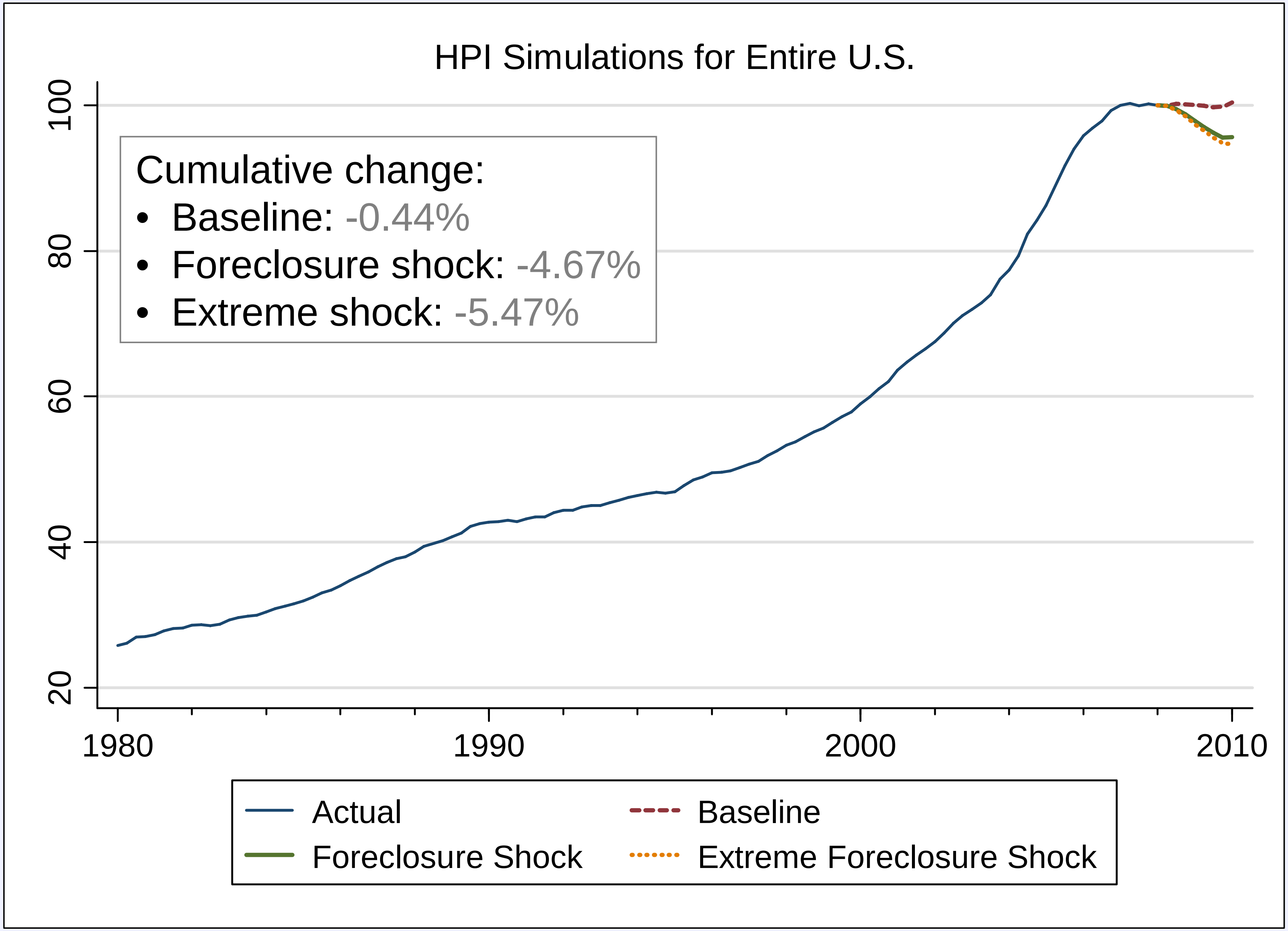




Current Foreclosure Rate vs. Historical Values
1st - 99th Percentiles
2008Q4 Value
Historical Mean
75th Percentile
Percent of Loans Outstanding
0
2
4
6
8
10
AK AL AR AZ CA CO CT DC DE FL GA HI IA ID IL IN KS KY LA MA MD ME MI MN MO MS MT NC ND NE NH NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY US
State

Figure 2: Impulse Response Functions





HPI Simulations for Entire U.S.
Cumulative change:
• Baseline: -0.44%
• Foreclosure shock: -4.67%
• Extreme shock: -5.47%
20
40
60
80
100
1980
1990
2000
2010
Actual
Baseline
Foreclosure Shock
Extreme Foreclosure Shock

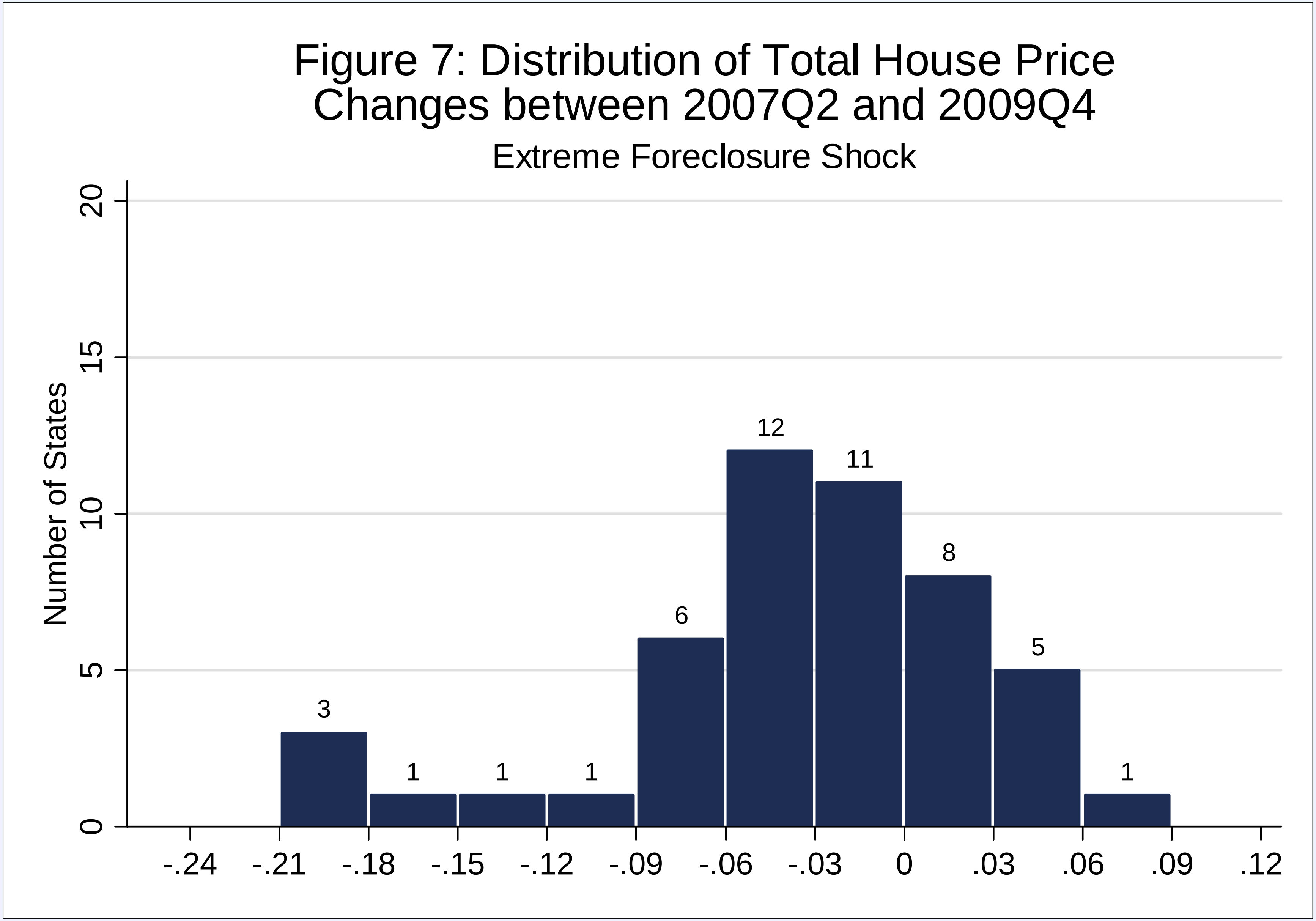


Figure 7: Distribution of Total House Price
Changes between 2007Q2 and 2009Q4
Extreme Foreclosure Shock
Number of States
0
5
10
15
20
3
1
1
1
6
12
11
8
5
1
-.24
-.21
-.18
-.15
-.12
-.09
-.06
-.03
0
.03
.06
.09
.12

Figure 8: Residential Investment by Household Sector Relative to GDP

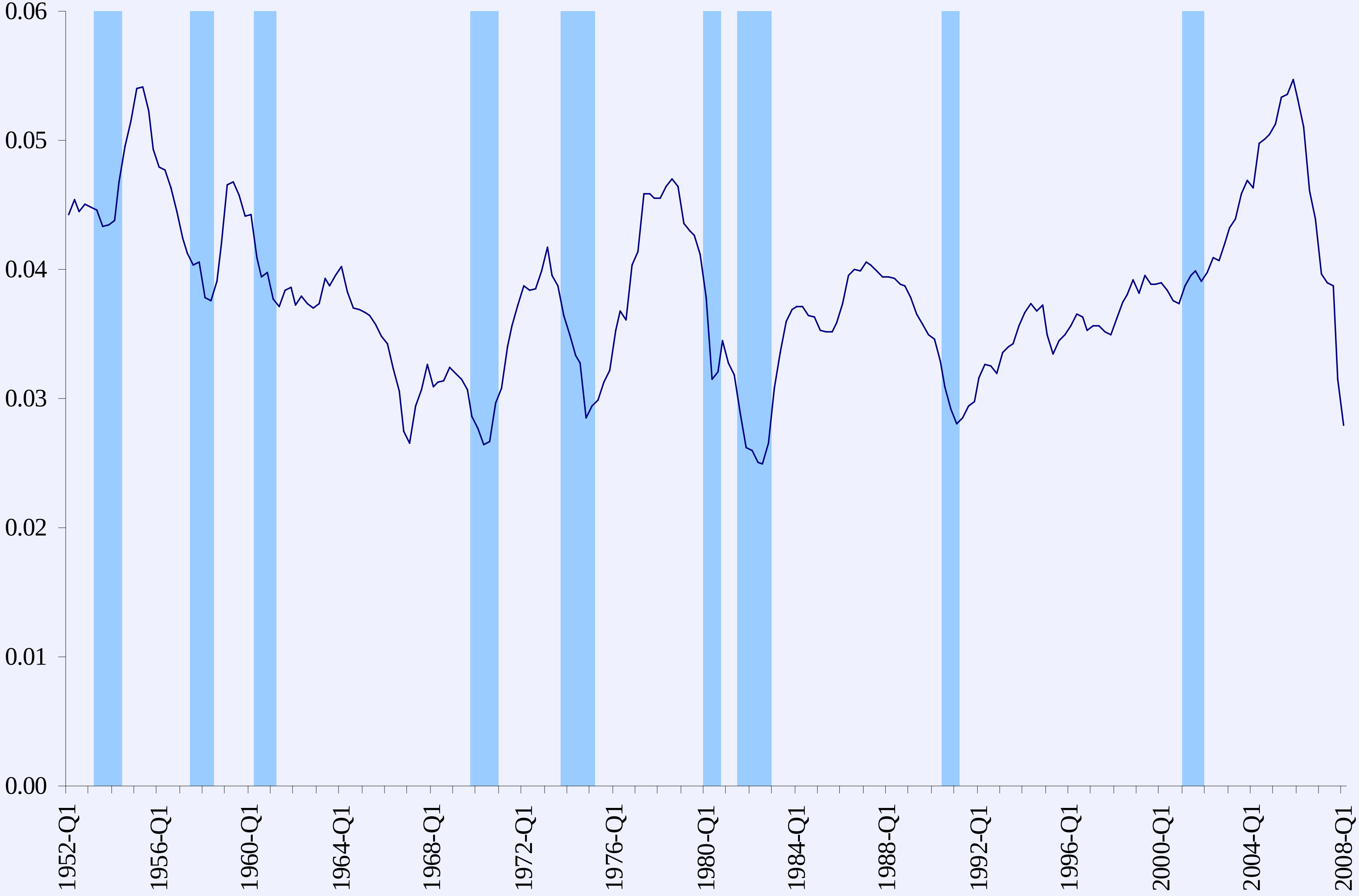
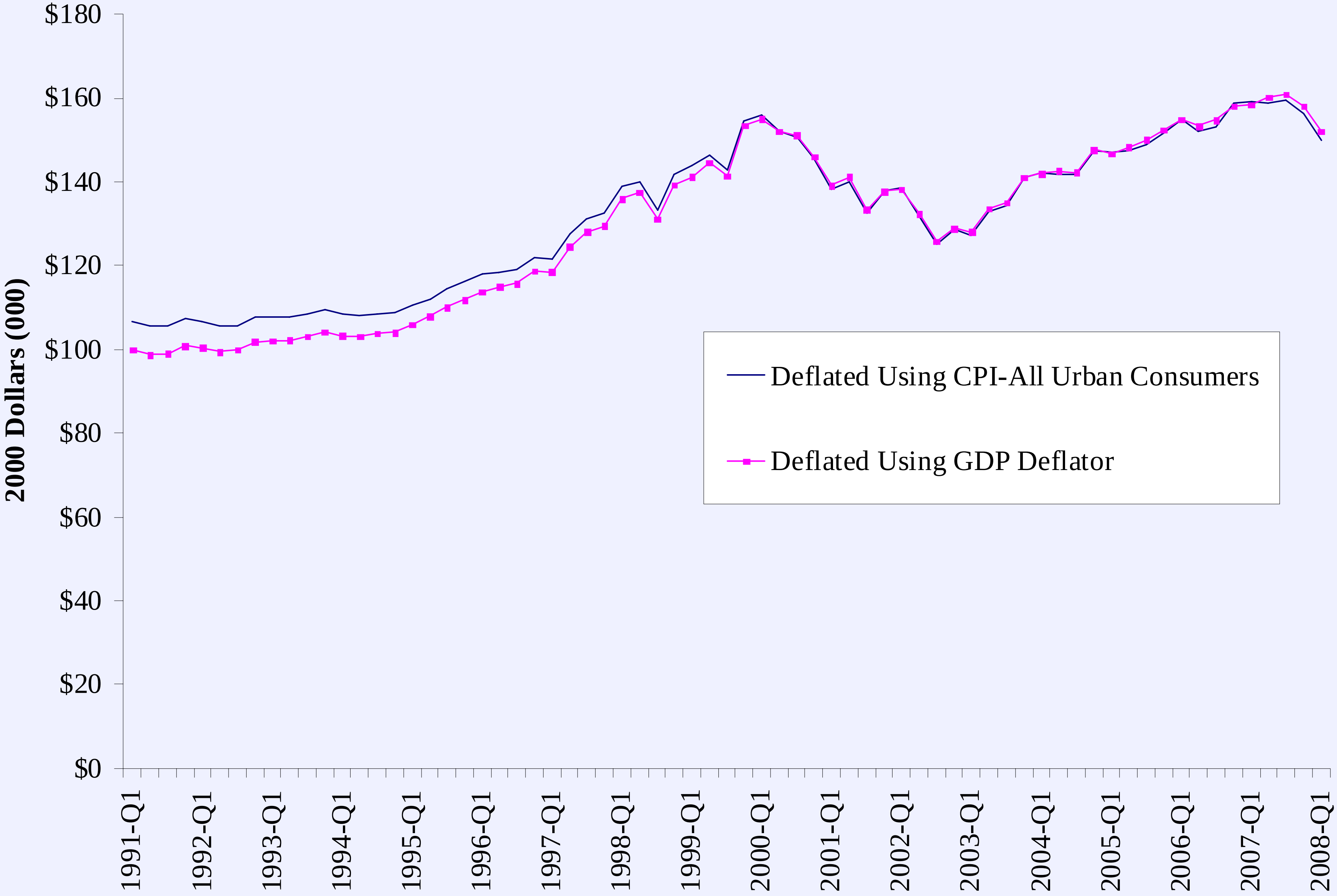


Figure 16: Real Household Net Worth Per Capita

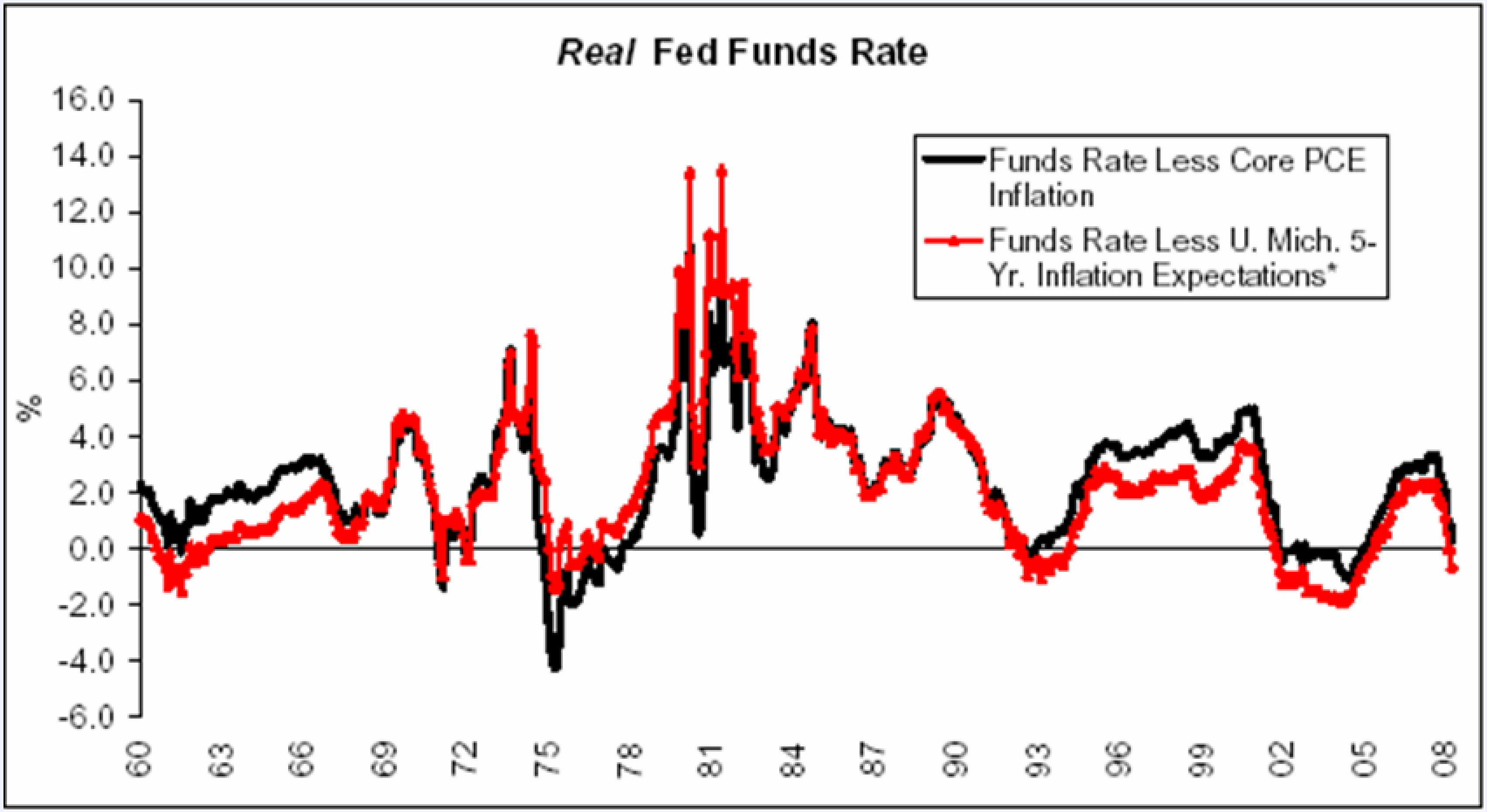


Severe Recession Risk Minimal

- Credit crunch will not be severe.
- Credit spreads are elevated, but were too low before the turmoil.
- Housing prices will not decline very much, and declines will be concentrated in some regions.
- Housing wealth effects probably have been overestimated by the Fed (2%, not 5% elasticity – see Gan); see also Buiter theory piece; and even Case-Shiller-Quigley (2005), while flawed, finds zero downside wealth effect.
- Jobs, wages, IP, global growth continue to be positive (or at least not highly negative) factors looking forward.

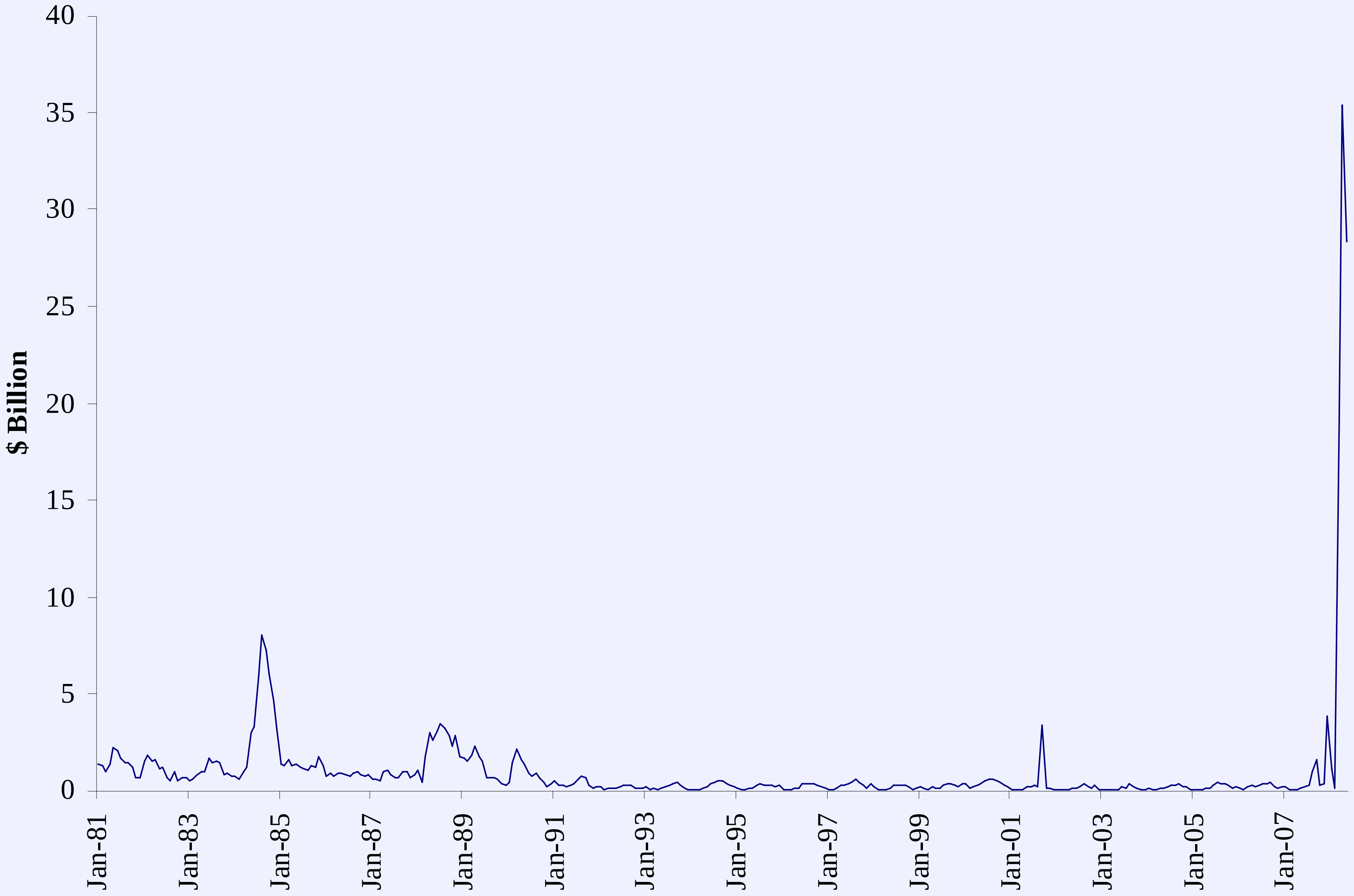
Policy Responses

- **Fed policy response** has been aggressive, perhaps appropriately; and is much more aggressive than 1970, 1987, and 1998 responses. Inflation is accelerating and is a risk going forward.
- **Discount window:** Section 23 forebearance, increased access to avoid interbank lending channel, and access for IBs all were appropriate, and consistent with Bagehot's rule and historical evidence on central bank lending effectiveness.
- **M-LEC** was a bad idea (phony books, postponement of losses contribute to prolonged shocks and high adverse selection costs).
- **Foreclosure relief**: Loss sharing with appropriate incentives, alongside putting an end to subsidizing imprudent leveraging; assist homeowners with downpayment matching grants.
- **Bank regulatory response:** Reform Basel II to (a) get rid of reliance on ratings (at least letter grades), (b) incorporate real market discipline rather than ratings and models, (c) require additional simple leverage limit, as in US (North Rock failure would have probably been avoided), (d) require prompt corrective action, (e) FDICIA reforms of lending and resolution of failed institutions, and (f) substantially raise minimum capital ratio on a phased in basis (for IBs too?; where to draw line?), but make the much higher minimal ratio adjust countercyclically.
- **Reform GSEs:** Fannie / Freddie risks are unacceptably high, lack a resolution mechanism. FHLBs risk also high ($51 billion of Countrywide's $100 billion in assets), possible asset stripping of FDIC.

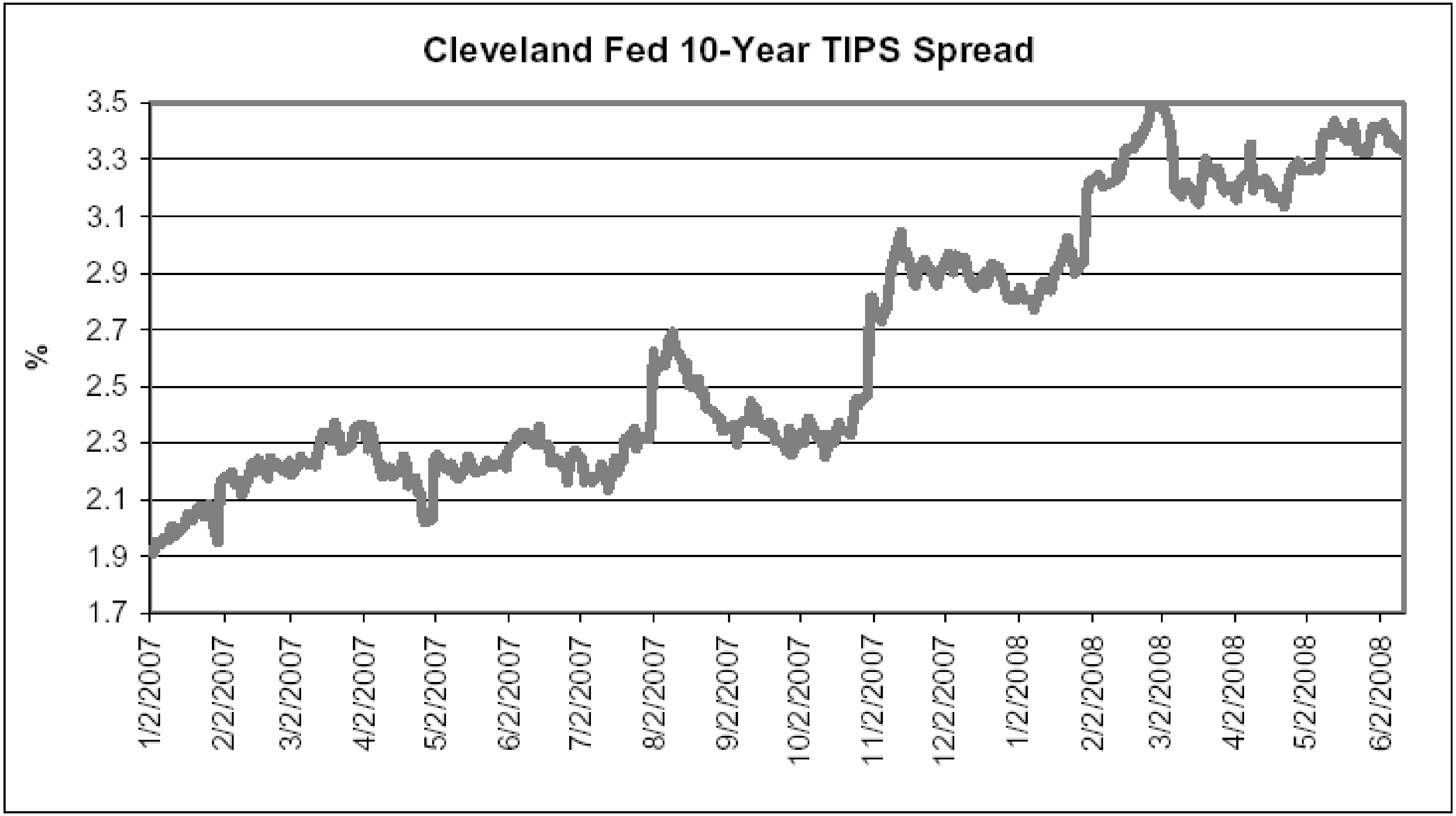


Real Fed Funds Rate
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
%
60
63
66
69
72
75
78
81
84
87
90
93
96
99
02
05
08
Funds Rate Less Core PCE Inflation
Funds Rate Less U. Mich. 5-Yr. Inflation Expectations*

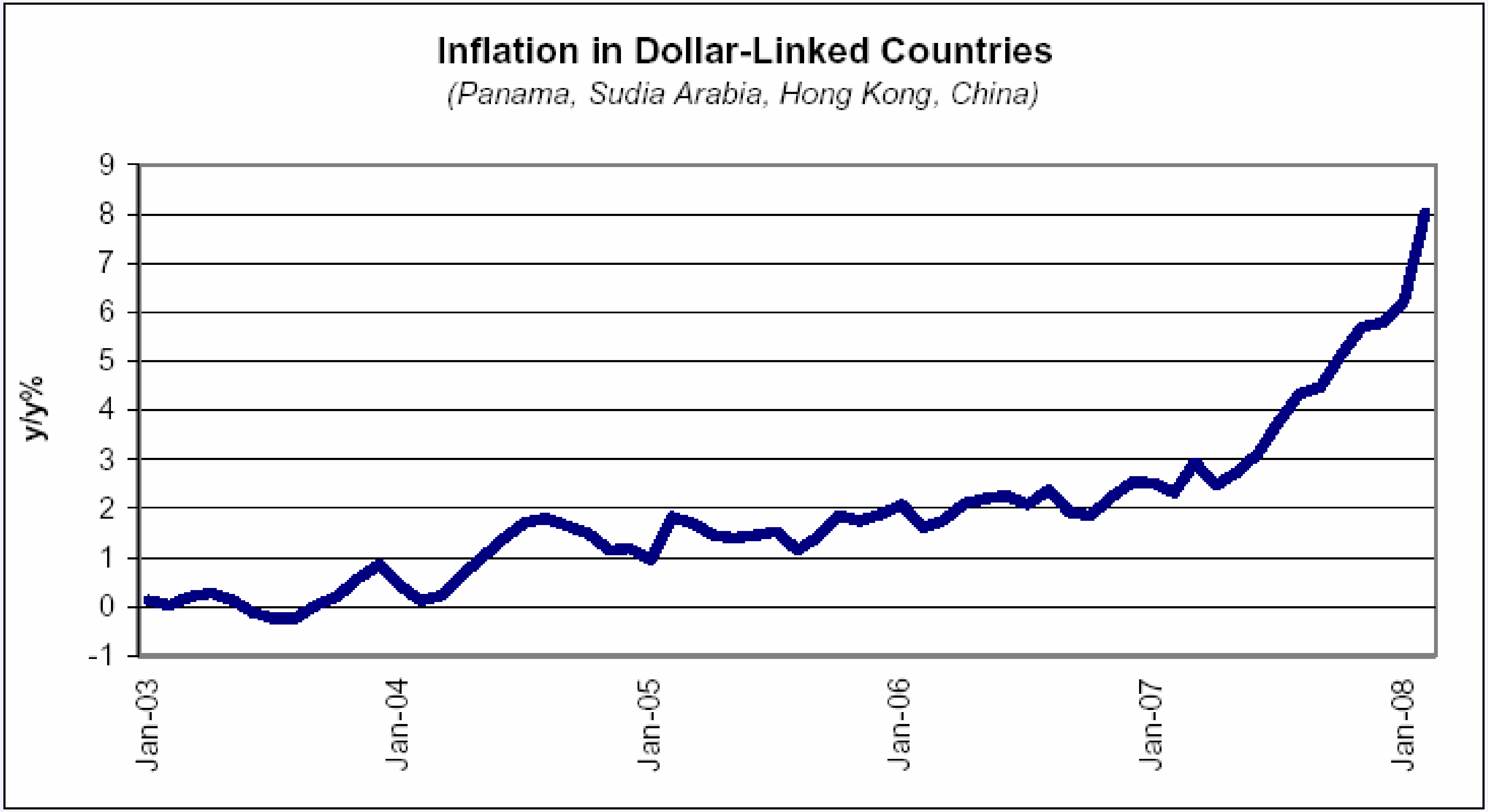
Discount Window Borrowings of Depository Institutions from the Federal Reserve



Commodity Prices



Source: Federal Reserve Bank of Cleveland



Inflation in Dollar-Linked Countries
(Panama, Sudia Arabia, Hong Kong, China)
y/y%
9
8
7
6
5
4
3
2
1
0
-1
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08