Lessons Learned From the US Mortgage Market Crisis

Dr. Michael Lea

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Outline of Presentation

- Overview of the Crisis
- Causes of the Crisis
- Examples from the Crisis
  - Countrywide Financial (US)
  - Northern Rock (UK)
- Lessons Learned From the Crisis

Overview of the Crisis

Background: Where Were We 18 Months Ago?

- Cash/Liquidity were plentiful
- Volatility, risk premiums, investor returns were unusually low
- Risk seeking investors used increased leverage facilitated by low cost borrowing to enhance yield
- Stock market strong (Dow up 19% in 2006)
- Short term rates rising; long term rates steady (Greenspan "conundrum")
- "Global savings glut" (Bernanke)
  - Foreign savings investing in US assets
  - Helped keep long term rates low

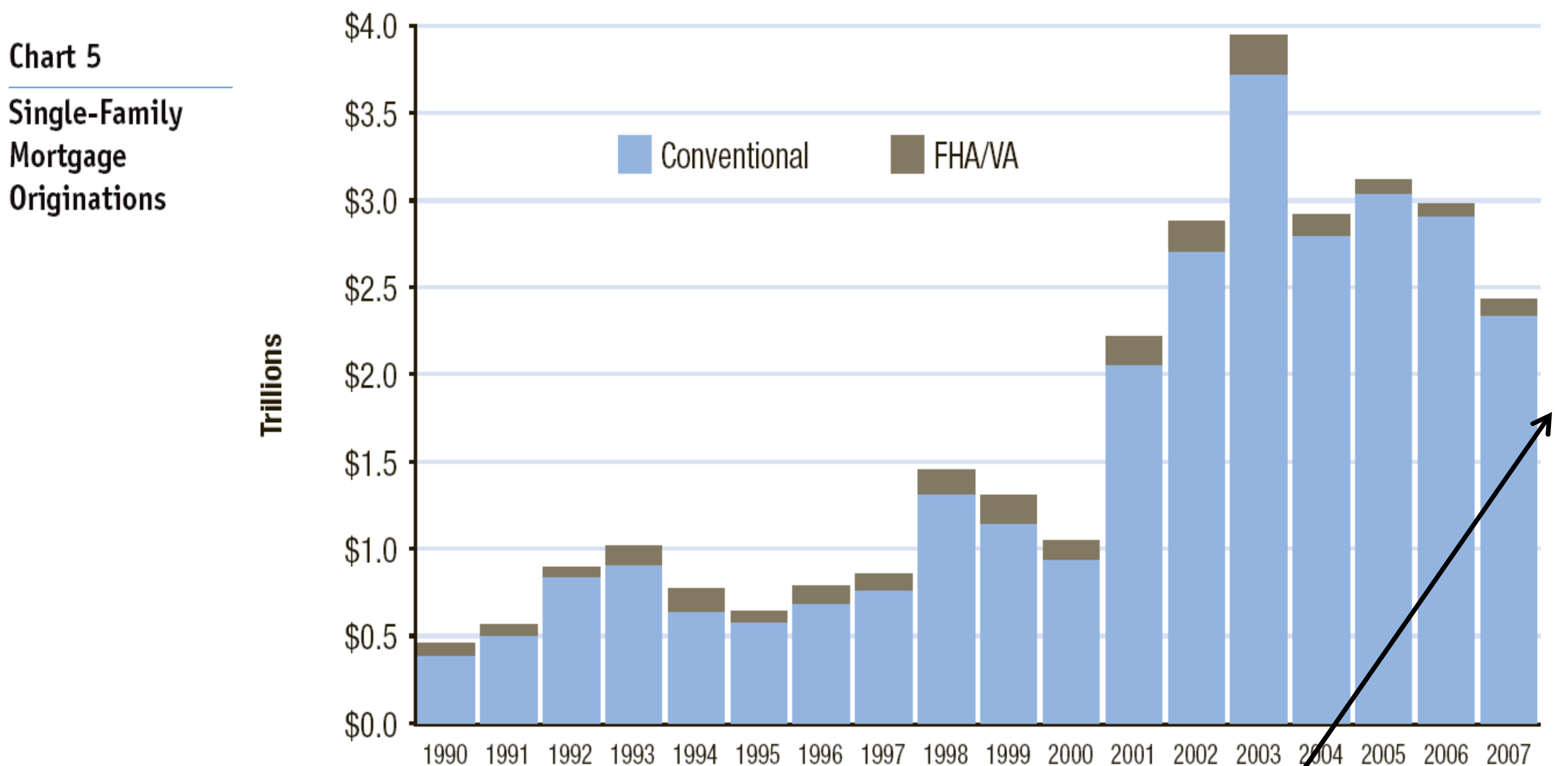
Source: Citibank 2008

Where Are We Today?

- Cash/liquidity at a premium
  - Banks and other financial institutions tightening credit standards
  - Banks fearful of lending to each other (high and volatile interbank rates)
- Mortgage market contracting
  - Many lenders have left the business
  - Government-backed mortgages “the only game in town”
- Volatility and risk perceived everywhere
  - Credit spreads have widened dramatically
  - Flight to quality – Treasuries rally while other markets sink

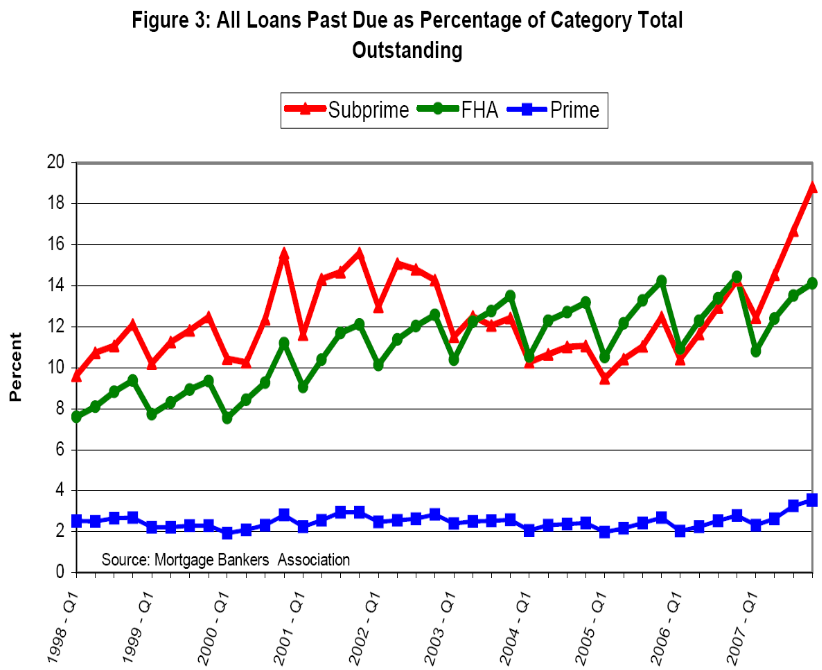
Source: Citibank 2008

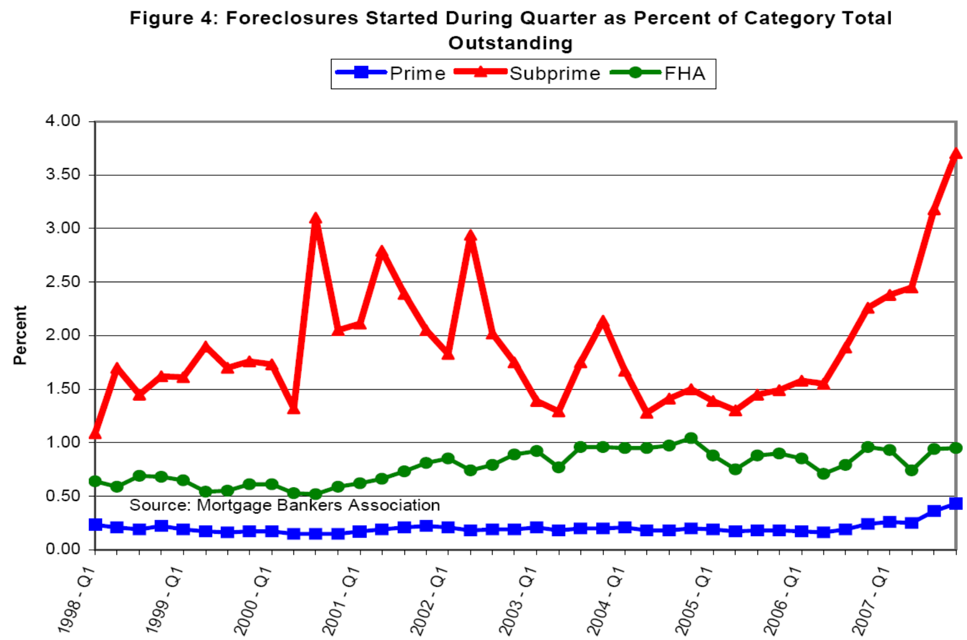
Slowing Mortgage Lending



2008 MBA forecast $1.87 trillion; FHA/VA market share >12%

Mortgage Defaults and Foreclosures Have Risen Sharply

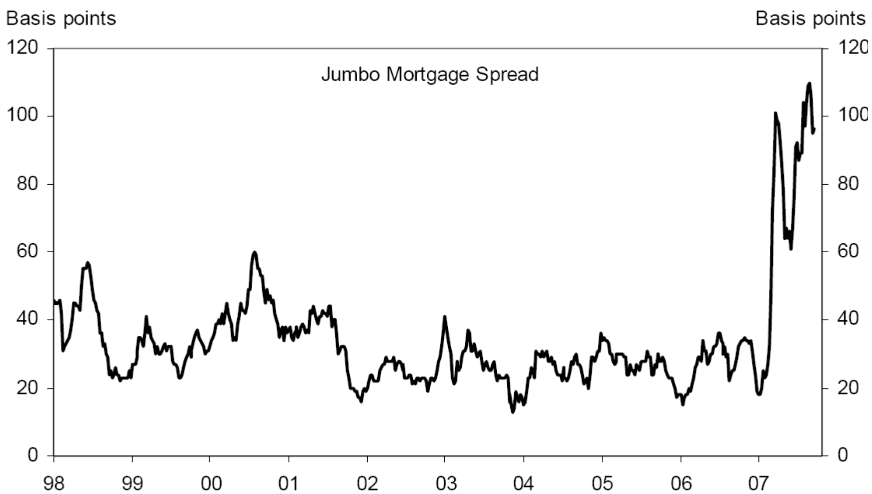




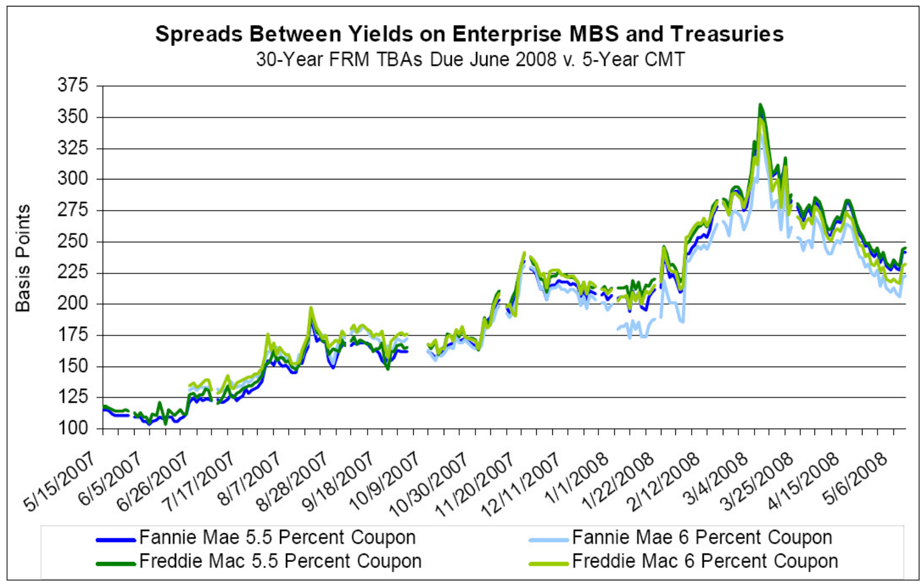
Source: Mortgage Bankers Association

Mortgage Spreads Have Risen

Exhibit 2.2 Jumbo Mortgage Spread



Source: BankRate.com.



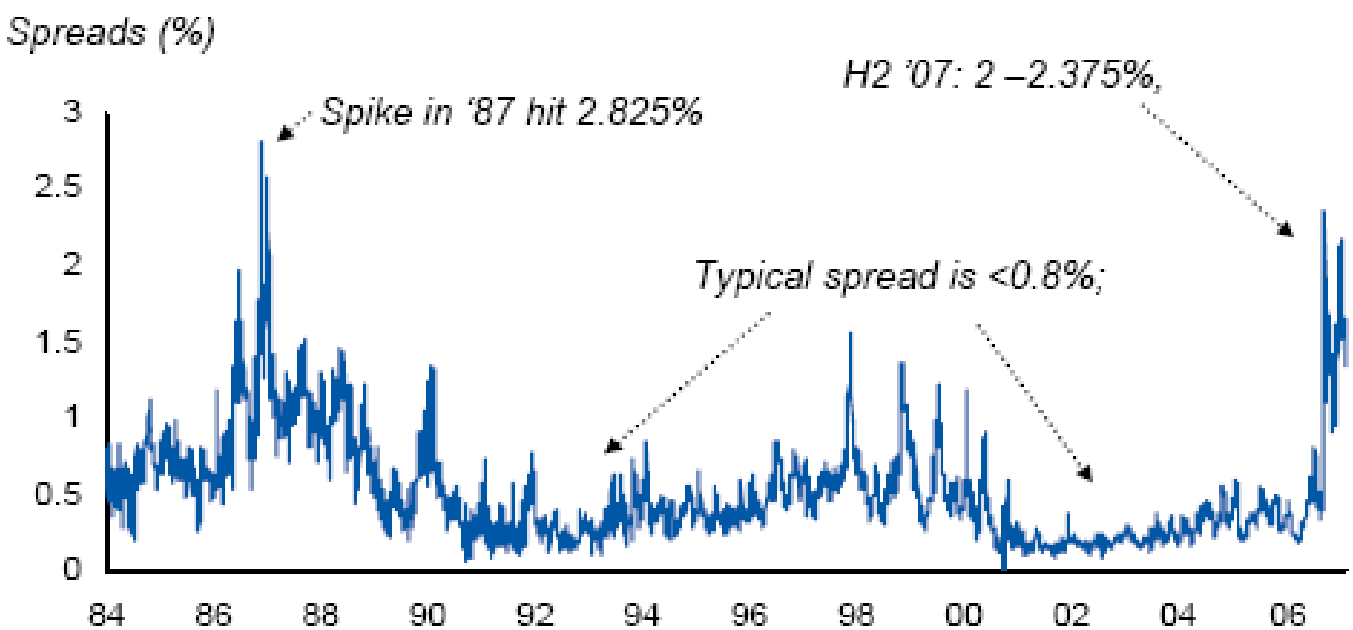
Source: OFHEO based on data from Bloomberg.

Greenlaw et. al 2008

Source: Lockhart 2008

As Have Other Spreads

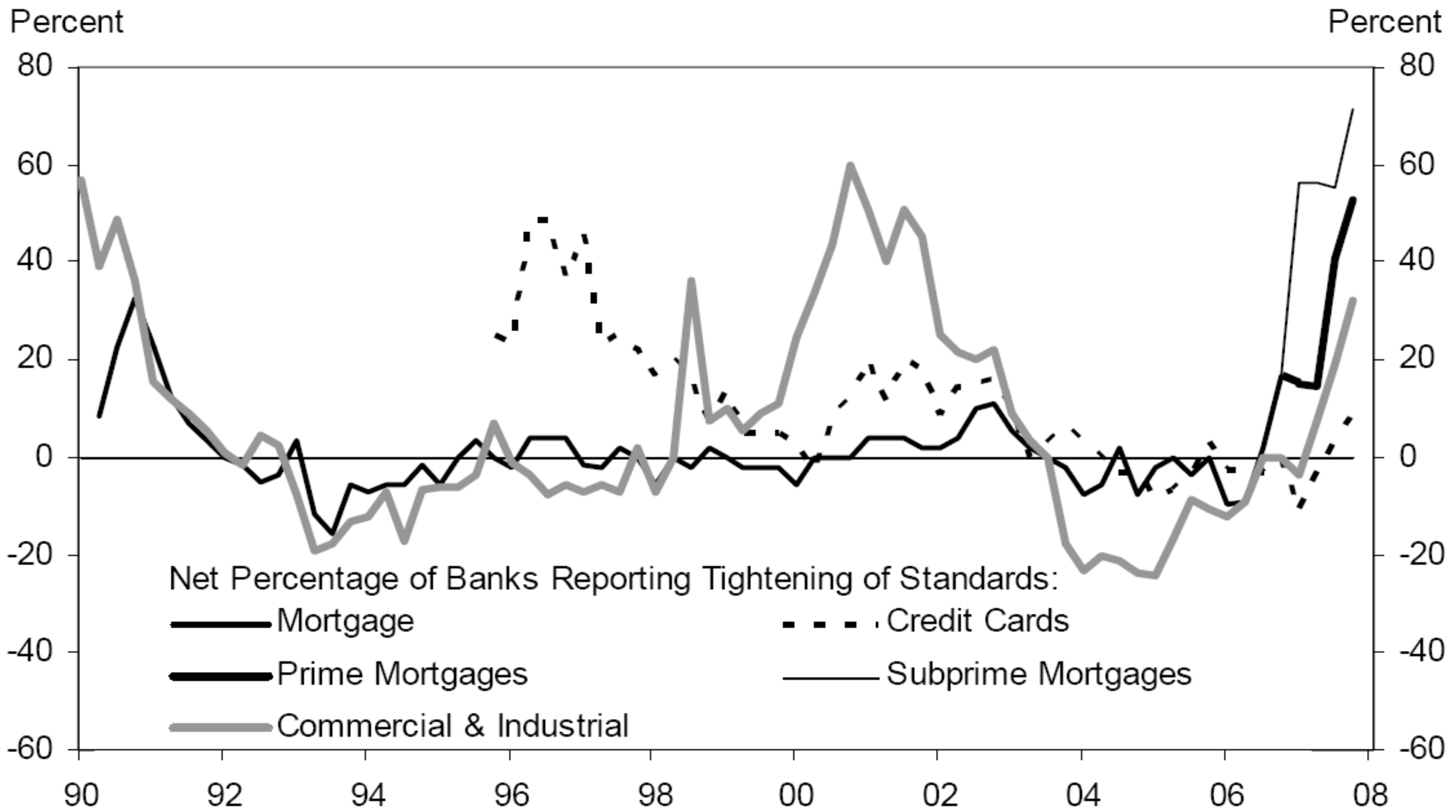
Interbank to T-Bill spread, 1984 -2007
3 month US LIBOR – 3 month Treasury Bill yield*



Source: Morgan Stanley

Lending Standards Are Tightening

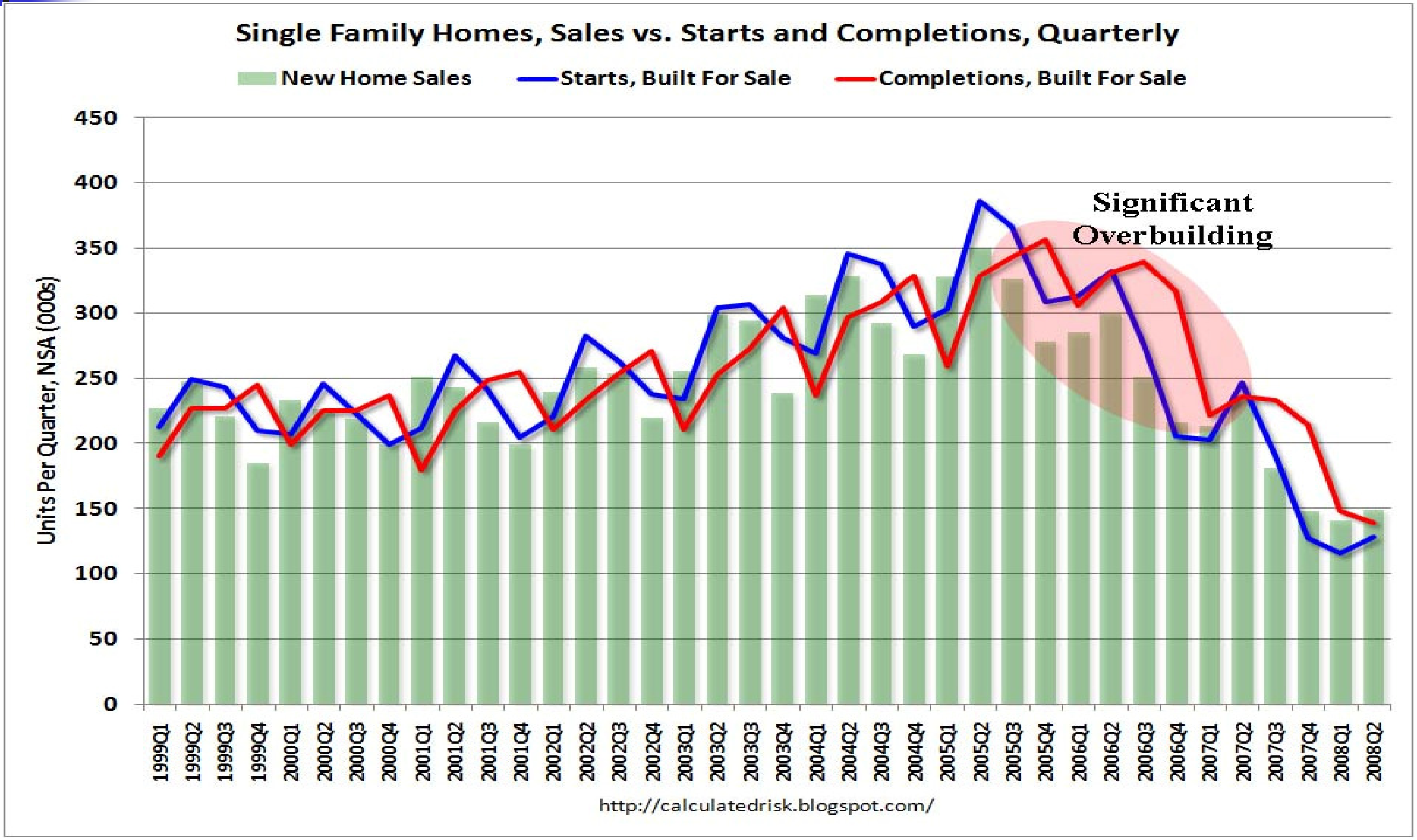
Exhibit 2.5 Senior Loan Officer Survey



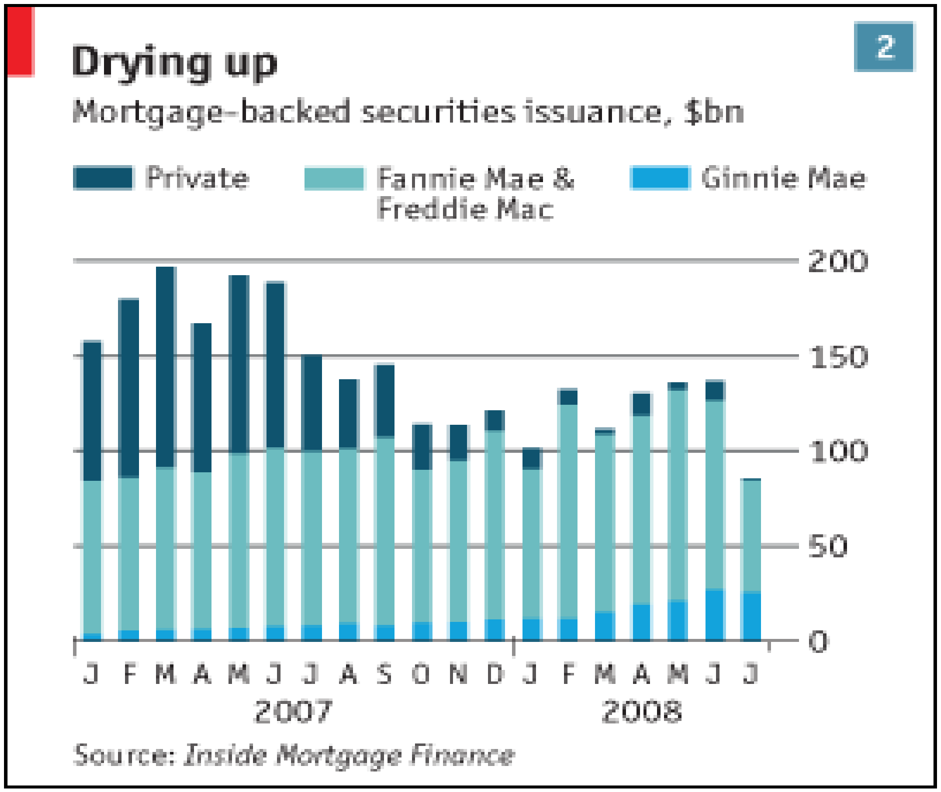
Source: Federal Reserve Board.

Greenlaw et. al 2008

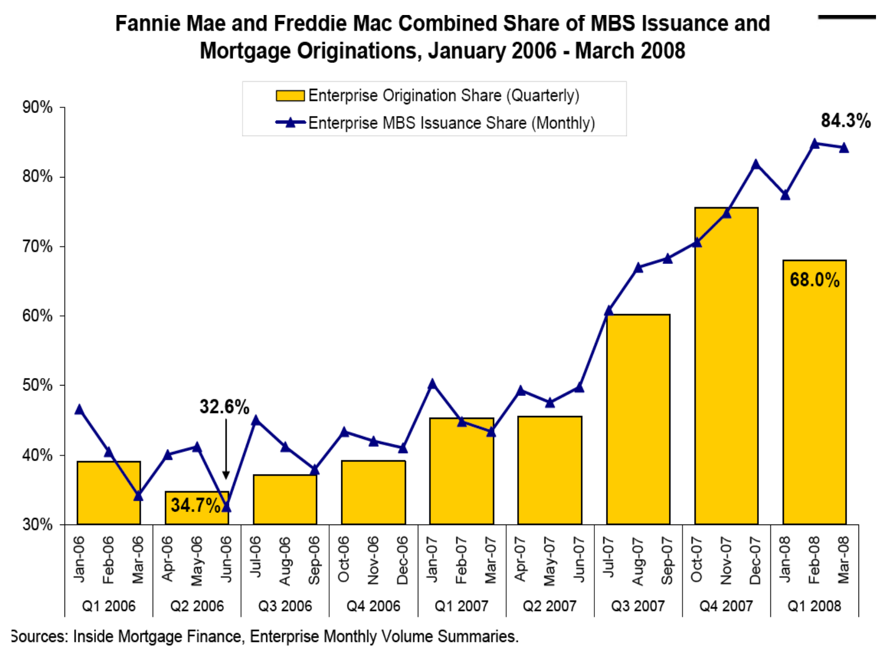
Housing Market Difficulties



Disappearance of Structured Finance



Source: The Economist



Source: OFHEO

Mortgage Institution Difficulties and Failures

Countrywide Financial

In a firesale acquisition that rescues Countrywide from the brink of bankruptcy, Bank of America throws another $4 billion up against the wall.

Thornburg Mortgage

Bloomberg reported "Thornburg Mortgage Inc., the "jumbo" home lender that averted bankruptcy in April, said it lost $3.3 billion in the first quarter because of writedowns on securities linked to real estate."

Freddie Mac

THE MORTGAGE LENDER Implode-O-Meter

Tracking the housing finance breakdown: a saga of corruption, hypocrisy, and government complicity.

Since late 2006 274 major U.S. lending operations have "imploded"

imfb IndyMac Federal Bank

"On, Friday, July 11, 2008, IndyMac Bank, FSB ("IndyMac Bank") was closed by the Office of Thrift Supervision ("OTS") and the Federal Deposit Insurance Corporation ("FDIC") was appointed as Receiver (the "Receiver").

FannieMae

Fannie, Freddie Take a Big Fall

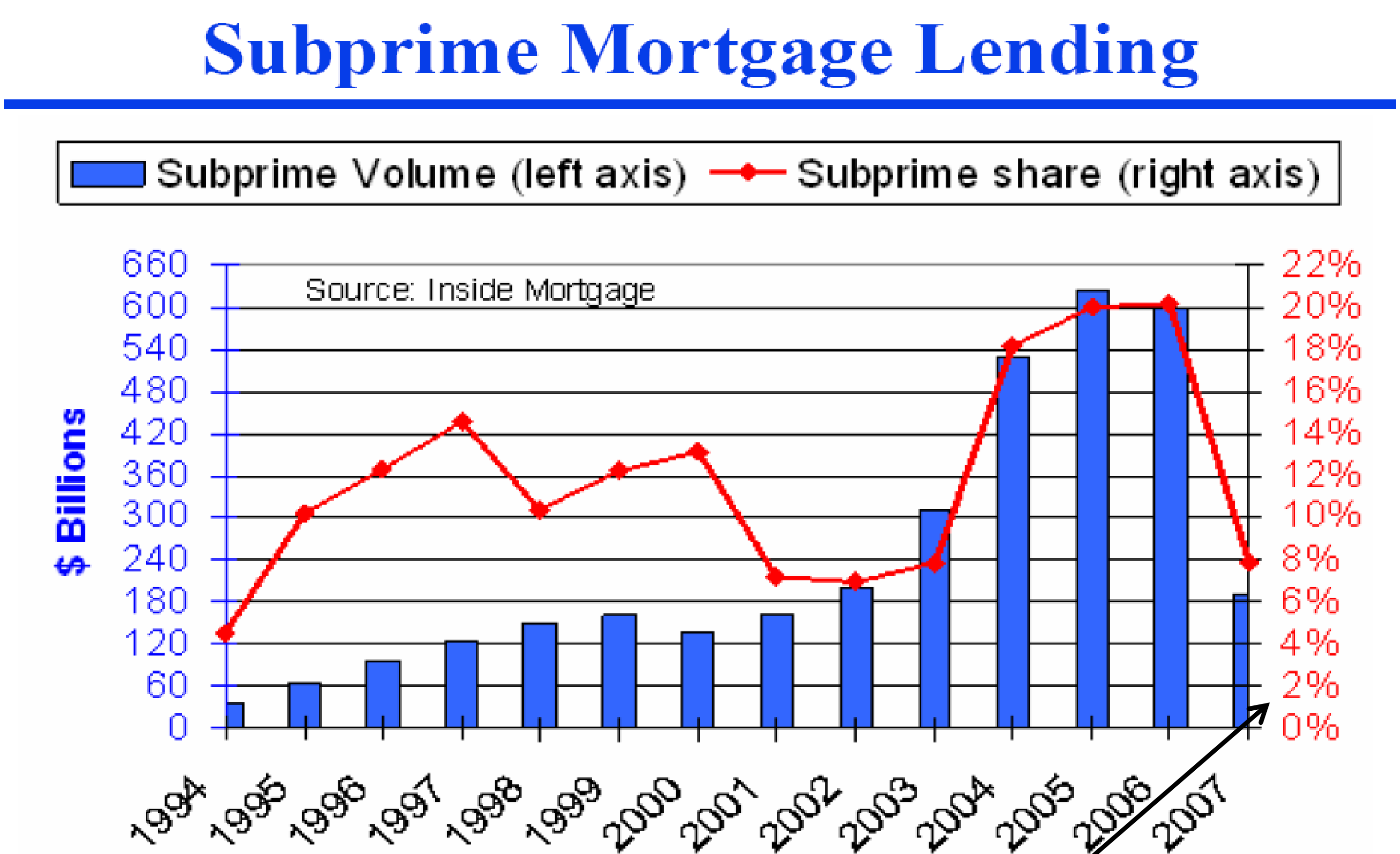
IN A MOVE THAT SET THE TONE for financial shares and indeed the entire stock market Monday, Fannie Mae (ticker: FNM) and Freddie Mac (FRE) were down sharply at midday following Barron's report suggesting that a federal recapitalization of the beleaguered mortgage giants is increasingly certain.

Causes of the Crisis

How Did We Get From There to Here?

- Started with sub-prime lending
  - Loans to borrowers with poor credit
  - Compounded with "risk layering" and use of adjustable rate mortgages
- Long period of rising house prices bred complacency
  - Rapidly expanding volume of poor quality credits
  - High initial LTV (low equity) predicated on continued house price appreciation
    - Expectation that borrowers could refinance
- Originate to distribute model became paramount
  - Sub-prime loans primarily originated by non-bank lenders
  - Everyone in the process volume and fee driven

Sub-prime Lending Dates Back to Early 1990s; Takes Off In 2003



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Lea August 2008 Forecast <2% in 2008

Higher Risk Loan Designs

- Increasing appetite for creative mortgage products
  - Longer term loans (40+ years)
  - Hybrid ARMs with low fixed “teaser” rate for 2-3 years then resetting to index plus margin (12% of prime, 65% of non-prime)
    - Most popular subprime loans 2/28, 3/27 (70% of 05/06 vintages)
    - High margins for non-prime borrowers (5 pct. Points or more)
  - Interest only loans (initial period where only interest paid on outstanding balance at low initial rate)
  - Pay option ARMs (borrower can select amortization – most with negative amortization)
- Common characteristics: low start rate to maximize affordability (loan size), prospect of sharply rising payments

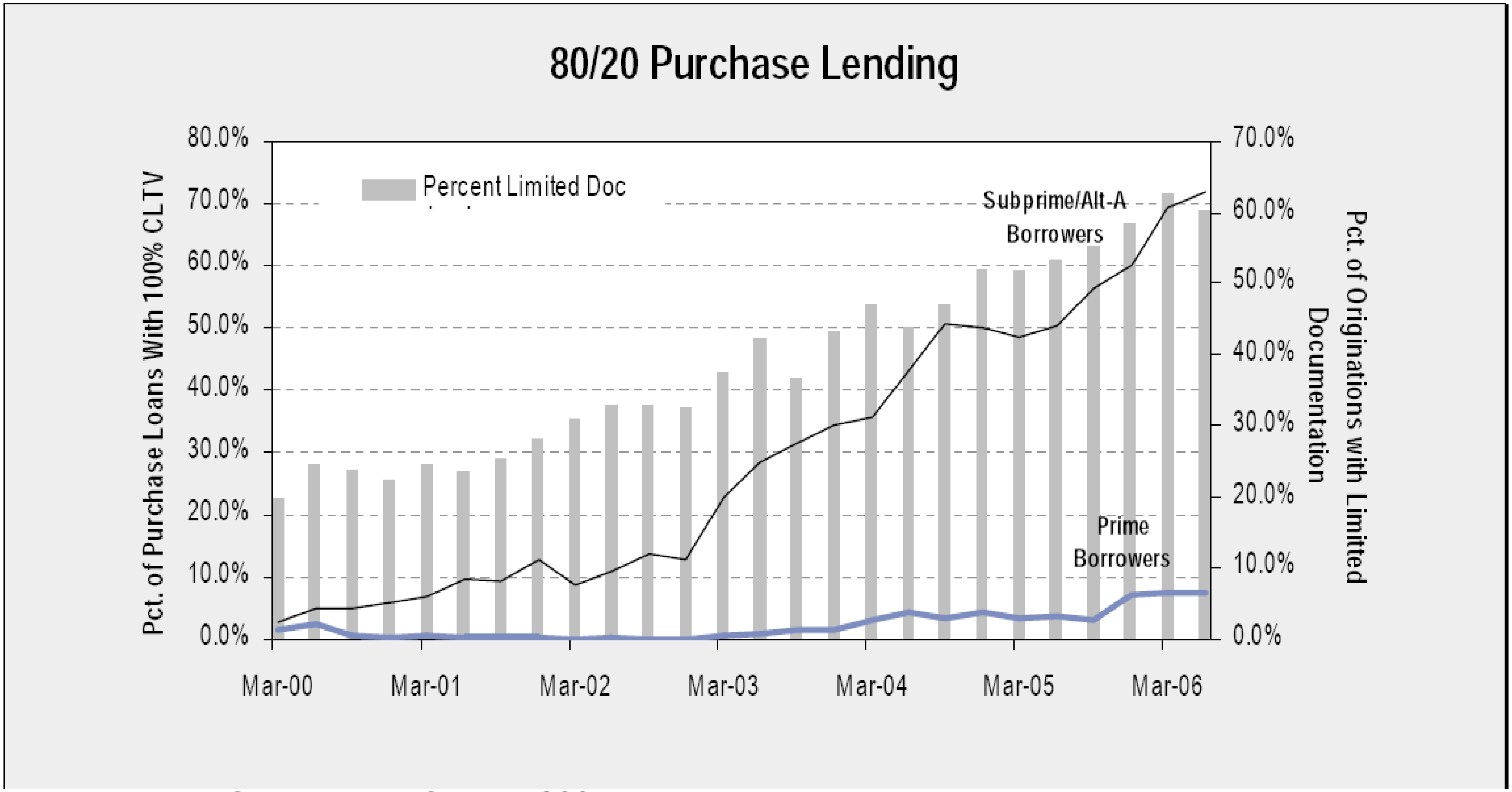
Declining Documentation Requirements ("Alt A")

Risk

Cost

Type of Documentation	Type of Information		
	Income	Assets	Employment
Full	Fully verified by lender	Fully verified by lender	Fully verified by lender
Alternative	Lender accepts W2s, bank statements, verbal verification of employment		
Stated Income	Stated	Fully verified	Verbal verification
No Ratio	Not reported	Fully verified	Verbal verification
Stated Income/Stated Assets	Stated	Stated	Verbal verification
No Income/No Assets (NINA)	Not reported	Not reported	Verbal verification
No Docs	Not reported	Not reported	Not reported

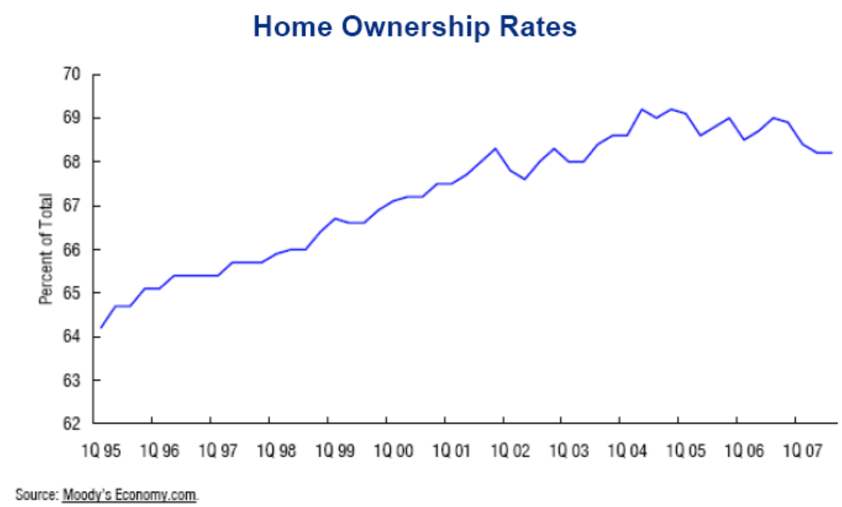
Risk Layering



Source: Bear Stearns 2007

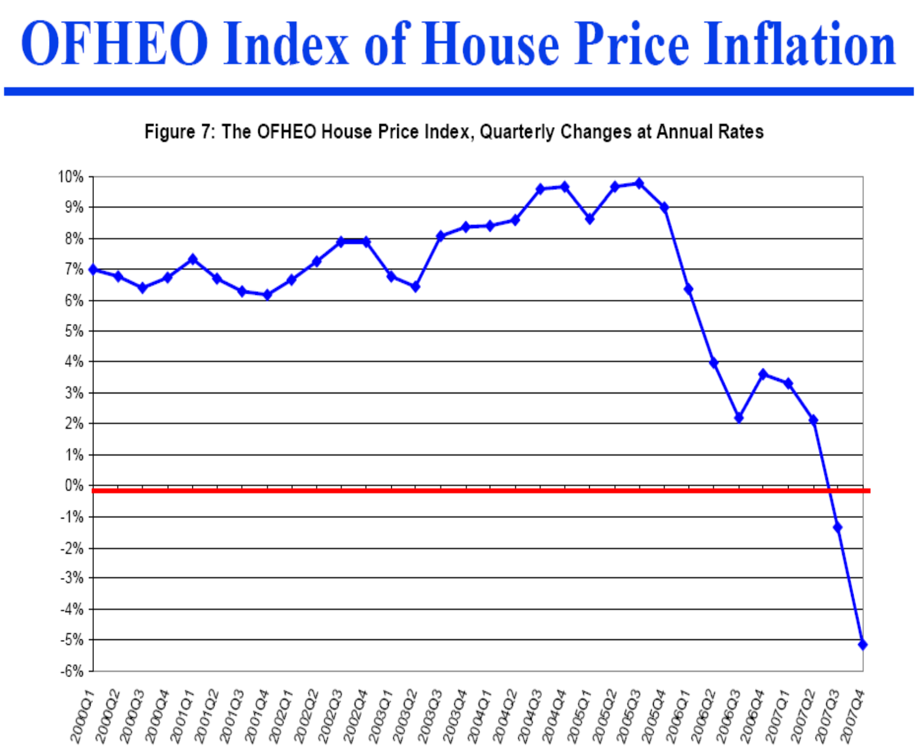
Public Policy Acceptance of Subprime

- US public policy has always been focused on homeownership (e.g., "Bush ownership society"
- Legislation encouraged or required lenders to push the envelope to expand opportunities
  - Community Reinvestment Act, GSE housing goals
- Estimates suggest that subprime accounted for more than 1 million first time home purchases (Jaffee 2008)

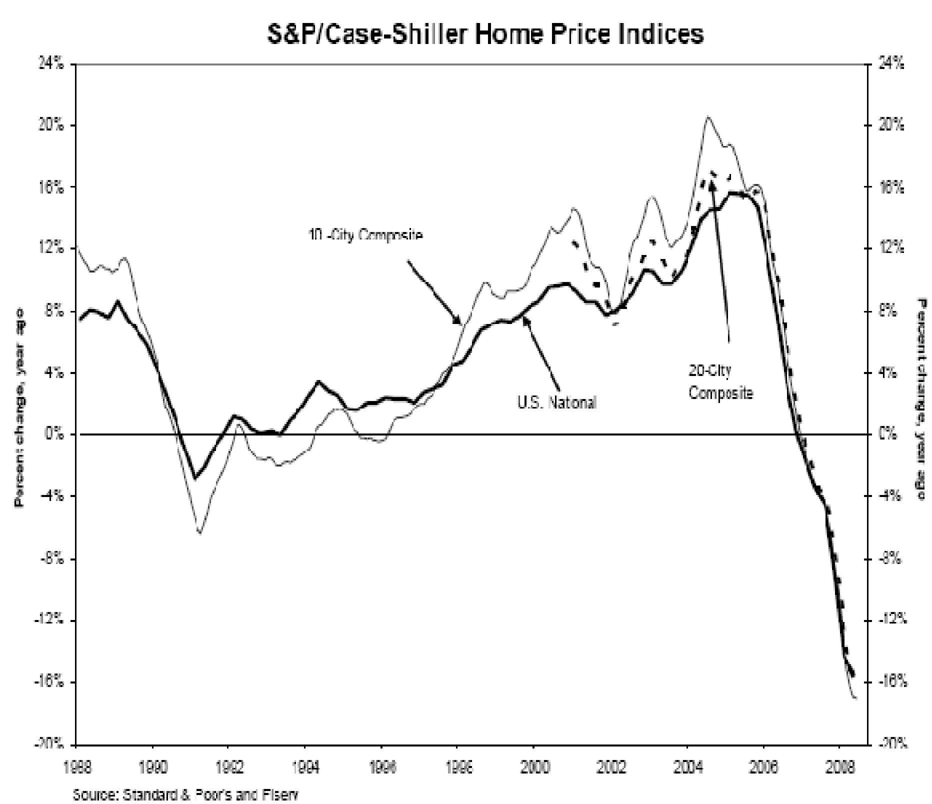


Source: Jaffee 2008

House Price Boom and Bust



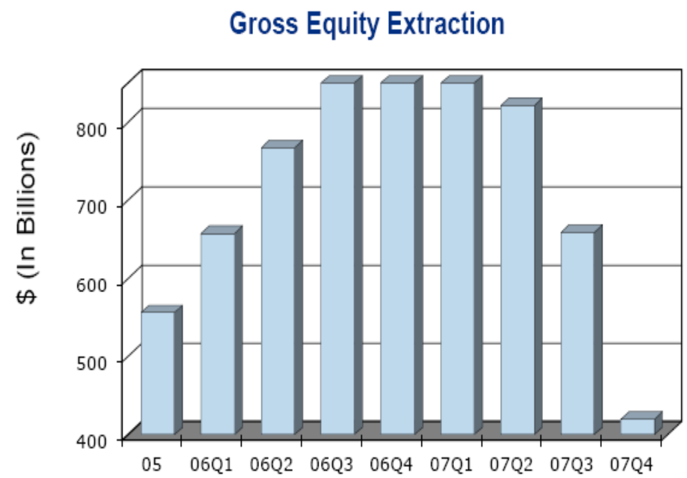
Source: Jaffee 2008



Source: Standard and Poors

Rising House Prices Fueled Mortgage Market and Economy

- High CLTV loans permitted borrowers to purchase houses with little or not money upfront and allowed borrowers to extract equity gains from housing to support consumption
  - Average CLTV rose from <80% to >90%
  - Borrowers took out equity via refinance and home equity loans
  - Increasingly borrowers had “no skin in the game”
- Speculation drove house prices in fast growth areas like Florida, S. California

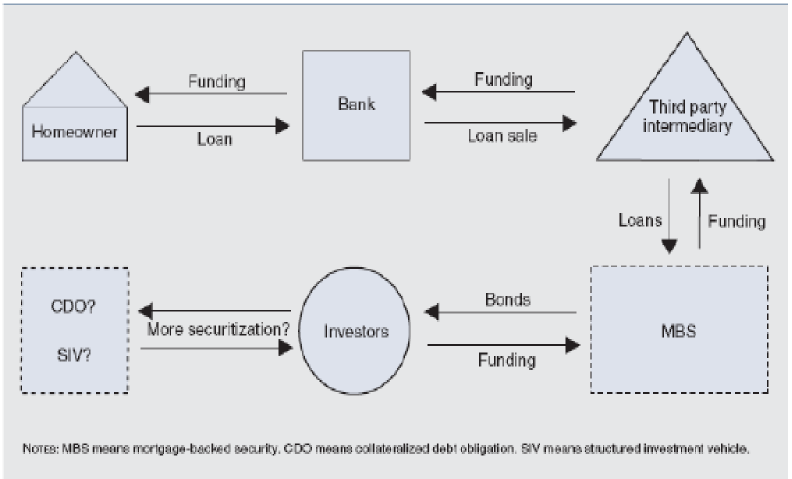


Source: Federal Reserve, Citibank

Securitization Played An Important Role in the Crisis

- During the 1990s the mortgage financing landscape changed from a portfolio funding model to a securitization model
- Securitization separates the lender from the holder of the loan
  - Just as the borrower has little at stake in a high LTV loan, so the loan originator has little "skin in the game" if the mortgage is sold
  - Broker and lender primary income is through fees
- Risky BBB MBS's converted to CDOs
  - Risk spread far and wide
  - While dispersion of risk seems good it may have exacerbated the problem

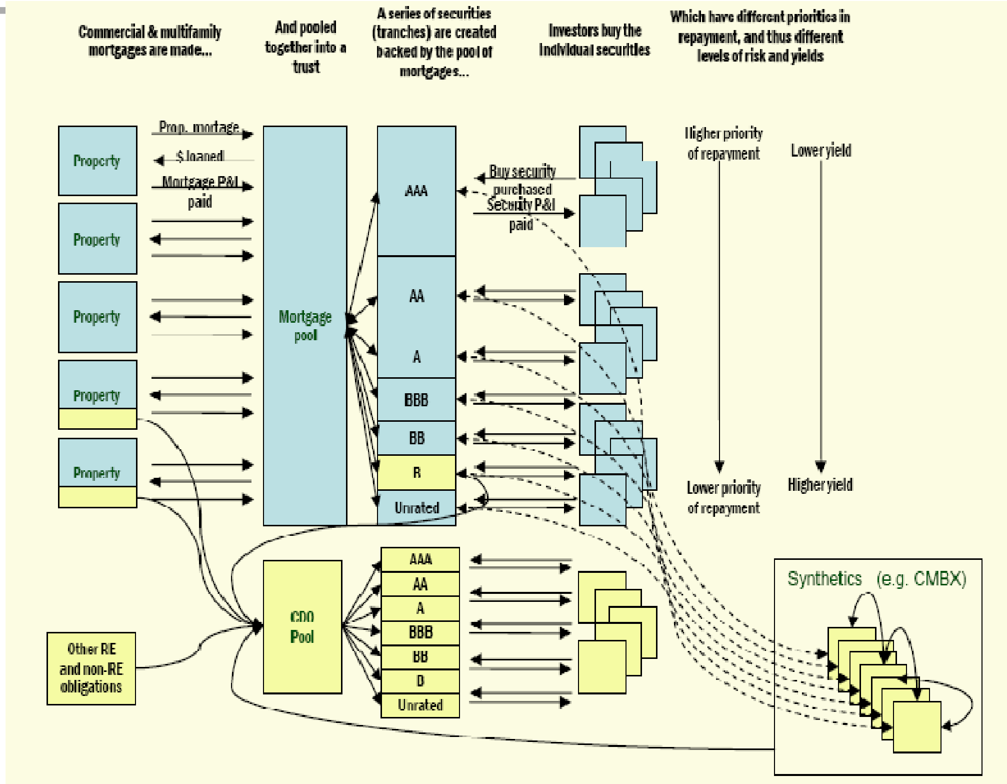
Mortgage Funding (Securitization) Process



Source: Citibank 2008

Securitization Structures Increase in Complexity

- MBS -> CDO -> CDO^2
  - Private label MBS have tranches tiered by credit quality (risk of loss)
  - Invest banks took lowered rated tranches (BB or below) and created collateralized debt obligations (tiered tranches)
  - Dependence on models to rate and value based on limited historical data



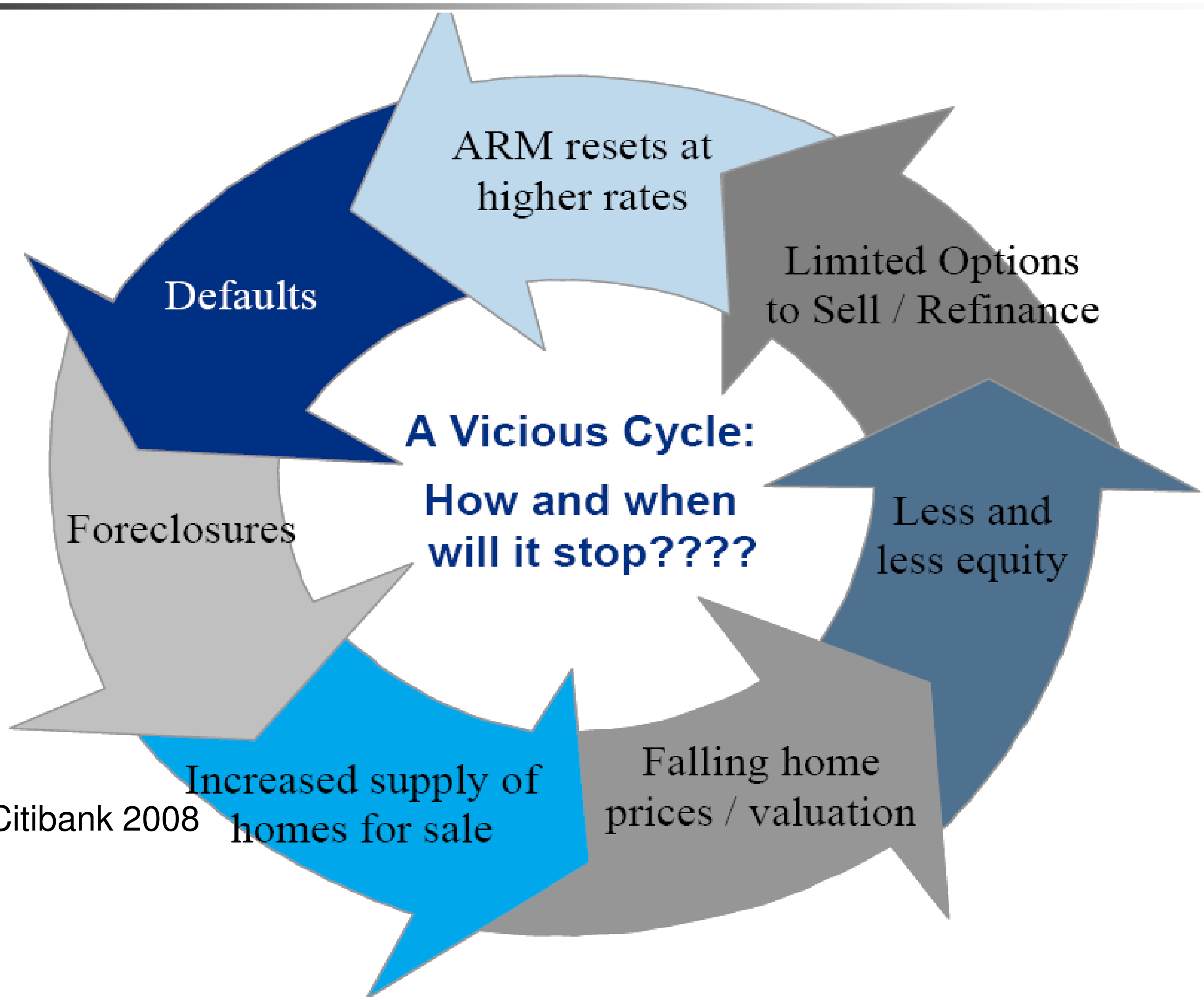
Source: D. Duncan MBA 2007

Note: chart based on commercial – substitute individual mortgages for properties to get residential MBS and CDO; ABX for CMBX

The Party Ends (Mid-2007)

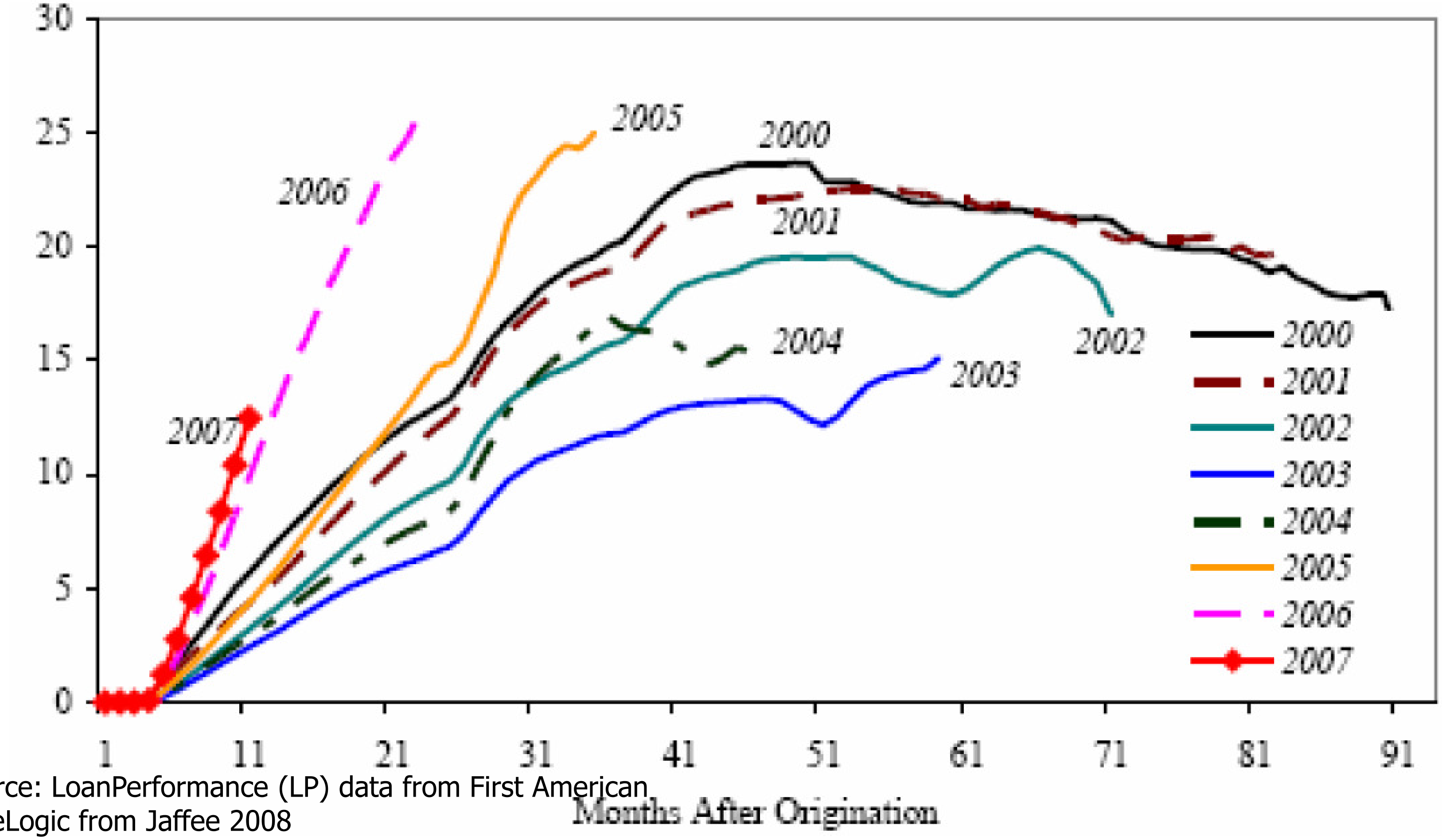
- Rising default and foreclosure rates, particularly among subprime loans led to concerns about stability of lenders and security structures
- Falling house prices, lender failures and tightening lending standards led to mortgage market contraction
  - Inability (or no desire) to sell or refinance
  - Fed guidance on non-traditional mortgage products
- Collapse of the structured finance market
  - Inability of originators to sell, holders to refinance
- Losses due to subprime estimated at $400 - $500 billion and rising
  - Precipitated a flight to quality

Bursting the Bubble



Source: Citibank 2008

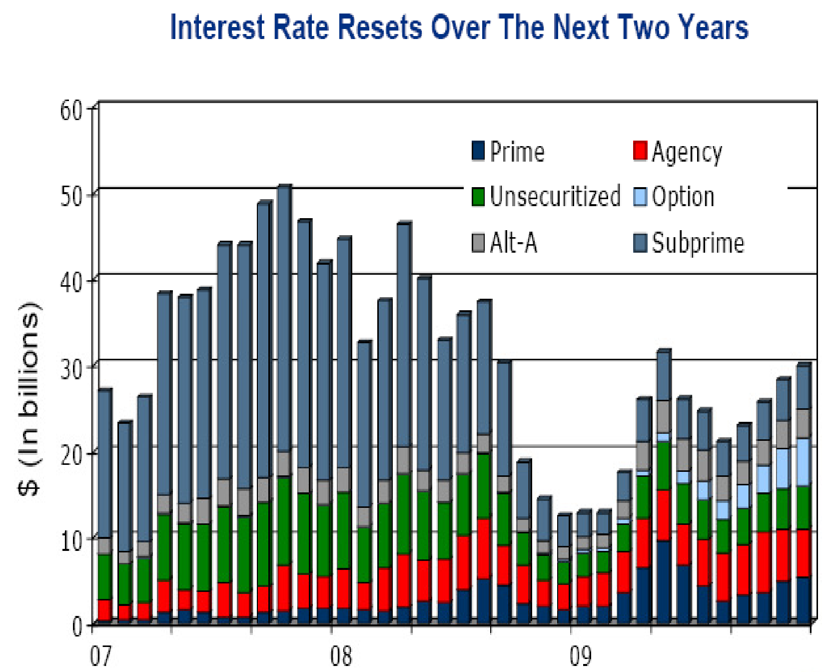
Sub-prime Performance By Vintage Shows Declining Standards



Source: LoanPerformance (LP) data from First American CoreLogic from Jaffee 2008

And More to Come

- Dramatic increase in defaults driven by house price decline and ARM reset
- In 2007, 35 out of every 100 loans at reset either defaulted or became delinquent within 6 months of reset
- Subprime resets heavy through end of 2008; by middle 2009 prime and Alt-A resets commence
- The latest vintage – 2006 and early 2007 – subprime regarded as poorest credit reset late 2008 and 2009



Source: Credit Suisse 2007

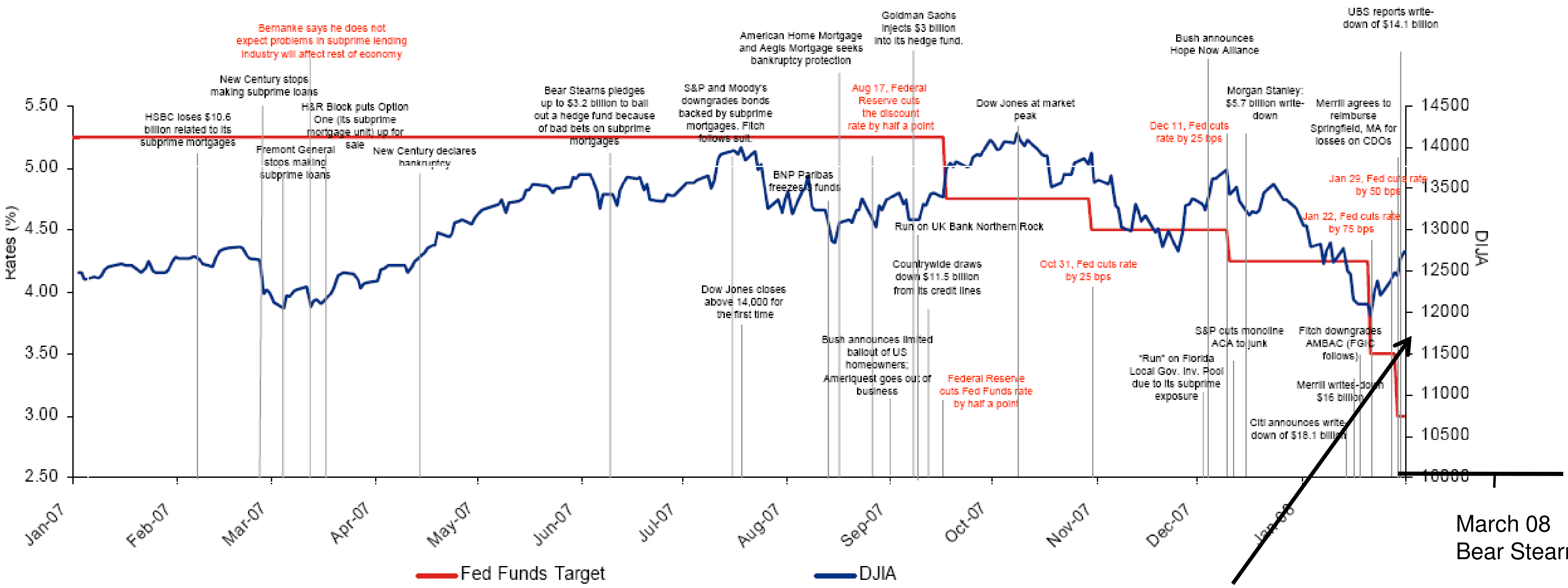
Problems With Fannie Mae and Freddie Mac

- US Mortgage "Government Sponsored Enterprises"
  - Govt. chartered, stockholder owned corporations
  - Purchase mortgages, issue mortgage-backed securities and corporate debt
- Fund a major portion of the US mortgage market
  - On-balance sheet mortgage assets $1.6 trillion
  - Off-balance sheet mortgage guarantees $$3.7 trillion
- Extremely high leverage
  - Core capital-to-assets and guarantees <2%
- Earnings difficulties
  - Heavy losses in 2007, 2008H1 due to loss provisions, security value write-downs
- Housing and Economic Recovery Act strengthens regulator and gives Treasury powers to guarantee debt, inject equity
- Stock prices plummet on fears of bail-out

Source: Wall Street Journal

Contagion Spreads Beyond Subprime

- Fitch: Subprime losses could total $500 billion (May 2008)
- IMF: Total US loss estimated at $945 billion (April 2008)
- Roubini: Total global loss could be $2 trillion (August 2008)



March 08
Bear Stearns

Lea August 2008

Dow closed 11628 on 8/22/08

Source: Citibank 2008

Examples From the Crisis

Countrywide Financial Corporation

- Started in 1969 by Angelo Mozilo and David Loeb
- Primarily an FHA lender through the 1970s – first nationwide mortgage banker
- Grew with the development of the secondary market in the 1980s and 1990s
    - Became #1 lender in 1992
- Strategy of diversification with expanded channels, capital market capabilities, loan closing services, insurance, global markets
- Purchased a bank charter in 2001

Countrywide Business Strategy

- Market domination in all channels (retail, wholesale, correspondent) – emphasis on growing market share and remaining #1
- Best in class operations
  - Leader in technology, process efficiency
  - Highly ranked in customer service
  - Hedging and interest rate risk management
- Diversified funding strategy
  - Retail deposits, wholesale funding (both short and medium term), securitization

- "Countrywide's performance however, is a testament to its technological leadership as well as the mortgage boom. One of the pioneers of online lending, CCR is utilizing its leadership to outperform its peers."

  -Erik J. Eisenstein, *BusinessWeek* August 2001

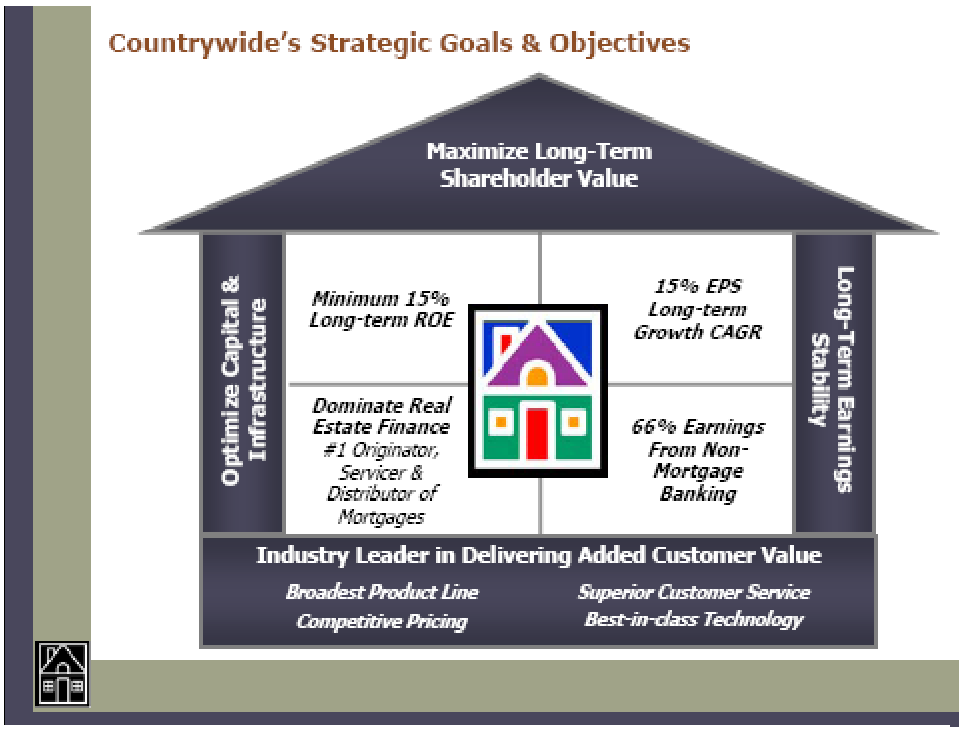
- "Countrywide has survived as the last major independent mortgage banker against competitors with deeper pockets and higher leveraging. The trick has bee constantly improving productivity and being willing to reinvent itself when the competitive environment changed."

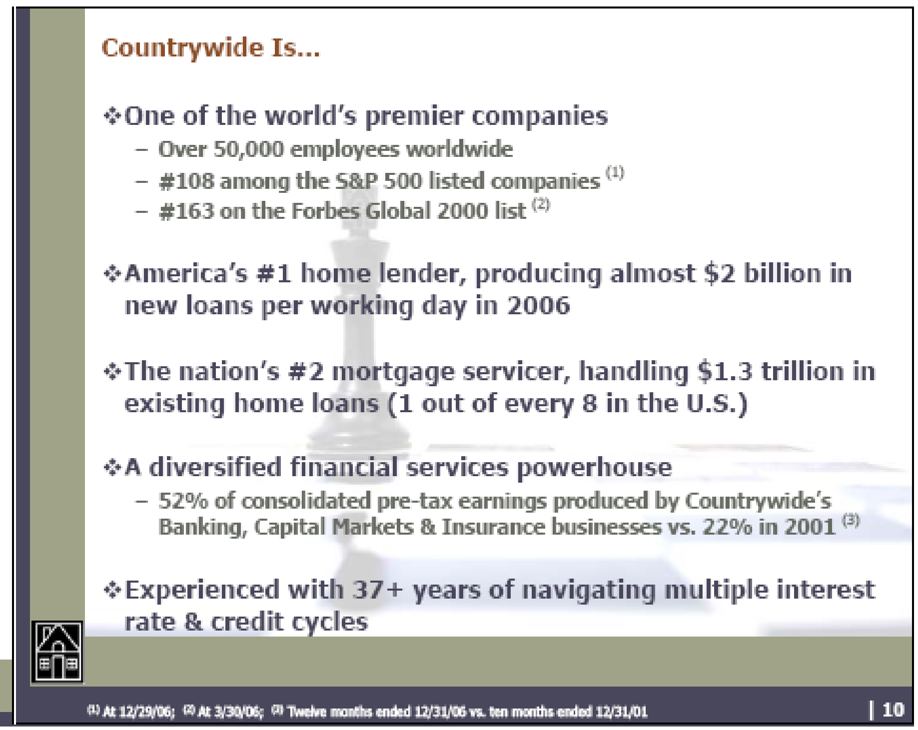
  -Robert Stowe England, *Mortgage Banking Magazine* January 2002

- "Countrywide has done a terrific job of developing businesses that maximize its income from loan originations, like appraisals, title insurance, etc.

  -Gary Gordon, Stock Analyst *UBS Warburg* February 2002

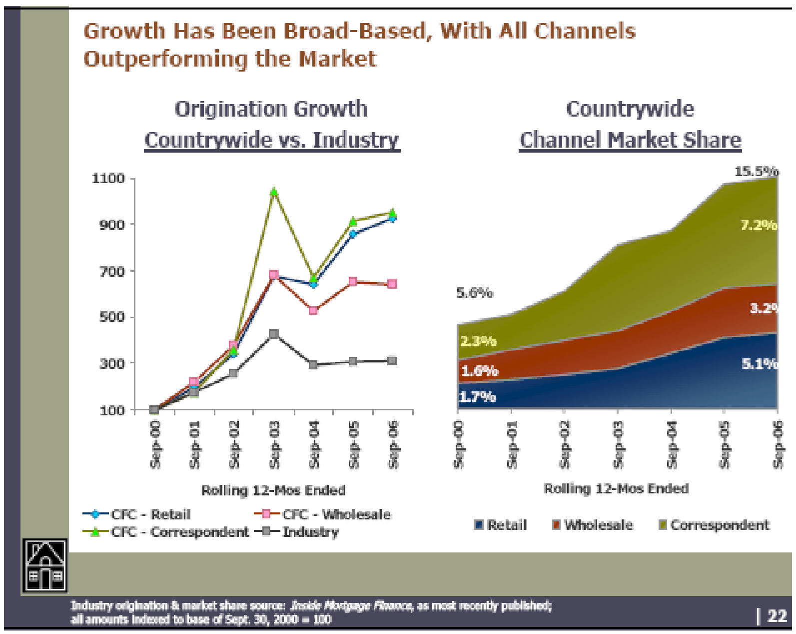
Countrywide Investor Presentation February 2007





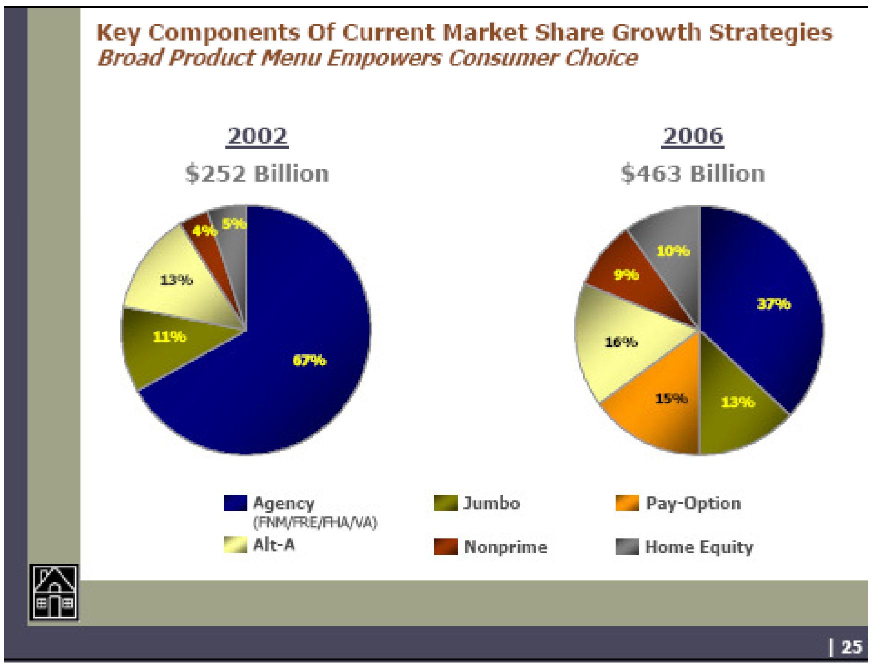
Company well capitalized and very profitable

2007 Business Strategy Continues to Emphasize Growth



Industry Outlook: 2007 to be a "trough" year with housing and mortgage markets rebounding in 2008; Mortgage lending still a "growth industry".

Increasingly Risky Product Profile



Prime adjustable products (including pay-option) funded in the bank; rest sold (prime conforming FRMs to GSEs, others through private label securitization

Third Quarter 2007: Market Turns Against Countrywide

- August 2007: The Trouble Begins
  - Disruption in securities markets begins after loss announcements by European banks
  - 8/6: American Home Mortgage, #10 lender, collapses
  - Countrywide announces disruptions in securitization markets could hurt it financially
  - News reports of potential bankruptcy risk; small run on the bank; rating agencies downgrade debt (but still investment grade); inability to issue commercial paper
  - 8/16: Countrywide announced drawdown of entire $11.5 billion pre-arranged liquidity line from 40 bank consortia
  - 8/23: Countrywide obtains $2 billion new capital from Bank of America

Fourth Quarter 2007: The Situation Worsens

- October 2008: 3rd quarter earnings release shows first loss in 30 years
  - States primary drivers of loss “non-economic and/or non-cash”, “non-recurring”, “valuation adjustments and increases for reserves against future losses”
  - Expects to return to profitability in 4Q 2007 and “long term prospects for housing, the mortgage markets and CFC earnings remain very attractive”
  - Moving production into the bank (89% of funding in 9/07)
  - Increased borrowing capacity of $18 billion; no CP, strong growth in deposits
  - Anticipates “growing market share” in 2008; remaining competitors “more responsible” banks and thrifts

Countrywide in 2008

- Announces agreement to sell to Bank of America on January 11 for $4 billion in all stock transaction
  - In January 2007 market capitalization was $28 billion
  - Likely reasons; inability to roll debt, likely downgrade of debt to "junk" status, rising loss estimates
- 2007 Final Results
  - $703 million loss; loss reserves up from $236 mn. to $2.3 bn; charge offs up from $156 mn. To $736 mn.
  - Total delinquencies 6.96%; non-prime 27.3%
- Quarter 1: Loss of $800 million
- Quarter 2: $2.3 billion loss with loan loss provisions of $2.3 billion. Merger consummated July 1, 2008

Countrywide: What Went Wrong?

- Focus on market share/domination led to lowering of standards 2004-2007
  - Anecdotally Countrywide would "follow the market" – increasingly that meant following the aggressive sub-prime specialists in relaxing underwriting, new products
- Countrywide realized too late that market conditions had materially worsened in mid-2007
  - Continued to generate production throughout product mix including sub-prime, Alt-A, jumbos which needed to be sold
  - Continued hiring commission-based sales staff from failed lenders
  - Mortgage loans held for sale 6/30/07 of $34 billion

Countrywide: What Went Wrong?

- Continued to think that market would turn around in 2008
  - While production slowed in Q3 and Q4, still #1
  - While 90% of production for bank or GSE sale, still accumulated assets in holding company that were difficult to sell
- While funding was diversified and liquidity backstop in place ultimately the share of wholesale funding was too high
- Past highly visible presence as #1 lender led Countrywide to be the poster child for abuse severely damaging reputation and generating negative PR

Northern Rock Bank (UK)

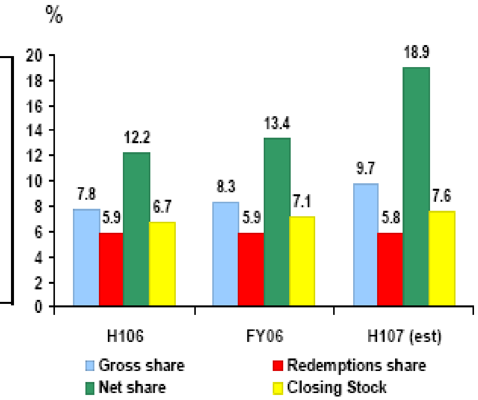
- Formerly a building society converted to a bank in 1994
- Similar business model to Countrywide
  - Mortgage specialist
    - Operated through multiple channels
  - But not diversified across mortgage-related business lines (only origination, servicing)
- Focus on growth, market share
- But not a sub-prime lender; arrears ½ of industry average

Residential Lending

Volume

	H106 £bn	H107 £bn	
Gross lending	12.7	17.4	+37%
Redemptions	(6.3)	(7.3)	+16%
Net lending	6.4	10.1	+59%

Market Shares



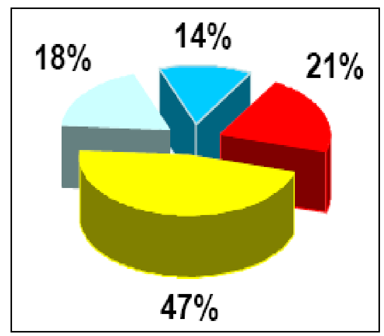
Northern Rock plc 2007 Interim Results

Northern Rock Strategy

- Diversified funding base but dependence on wholesale funding
- Mid-2007 planned asset sales to remove high risk weighted assets from balance sheet and focus on residential lending
- Highly profitable and well capitalized
  - FSA granted waiver to begin using internal Basel IRB models for capital adequacy determination June 2007

Funding Mix

H107 Flow



	£bn
Retail	1.7
Wholesale	2.5
Securitisation	5.6
Covered Bonds	2.2

Diversified funding platform

Northern Rock in the Crisis

- Sept. 12 Rock asks Bank of England for liquidity support facility due to problems in raising funds in the money market to replace maturing money market borrowings
- Sept. 14 – run on the bank begins
- Sept. 17 – Treasury announces it will guarantee all deposits
- Jan. 2008 – Northern Rock's loan from the Bank of England grew to £26bn
- Feb. 2008 – the Office for National Statistics announced that it was treating Northern Rock as a public corp. requiring additional public debt to be issued

Resolution of the Crisis

- Feb. 4 2008: Bids for the Rock rejected as not providing sufficient protection to the government
- Feb. 17 – Rock nationalized
- March 31 – annual results show loss of £167 million
- August 5 – loss of £585.4m for the first 6 months of the year
  - Underlying loss before tax of £176.3 million reflecting loan loss provisions, lower interest margins and reduced volume of new business
- Under new management; plan to downsize, repay BOE loan by end 2010, return to profitability and be sold by 2011

Northern Rock – What Went Wrong

- Treasury Committee of House of Commons issued report "Run on the Rock" in January 2008
- Report blames management for pursuing reckless strategy of high growth and dependence on wholesale funding
- Report also blames authorities for inadequate supervision
  - Lack of coordination between BOE, FSA and Treasury
  - Infrequent FSA examinations by under-qualified staff
  - Relaxation of capital requirements at time of high growth
  - Flawed deposit protection scheme that did not reassure public

Lessons Learned

Blame Game Underway

- Borrowers: greedy speculators
- Lenders and brokers: greedy, fee driven, preying on uninformed or misinformed borrowers
- Securitization: investment banks created opaque securities and improperly marketed them to unsophisticated investors
- Investors: Should have know better
- Regulators: Asleep at the switch; lack of oversight authority for shadow banking system; inadequate consumer protections
- Policy makers: excessive emphasis on homeownership

Lesson #1: Incentives Matter

- Borrowers with no equity in their properties are more likely to default
  - In the US lenders can't go after deficiencies
  - Borrowers should make meaningful downpayments and lenders should adjust max LTVs when house prices decline
- Loan officers and brokers focused on volume maximization in order to earn fees (do anything to get loan approved)
  - Frequent incidence of fraud ("liars loans")
  - In Australia mortgage brokers paid trailing fees
  - Proposals to require securitizers to keep a portion of the risk

Lesson #2: These Are Cyclical Markets

- House prices don't go up forever – parts of the US suffered nominal house price decline in both the 1980s and 1990s
- Mortgage markets suffer from "disaster myopia" – lenders and investors ignore or discount infrequent events leading to relaxation of standards, reduced pricing of risk (Guttentag and Herring)
  - Issue for regulation (e.g., Basel II IRB based on only 5 years of data)

Lesson #3: Don't Blame Securitization

- There were flaws
  - Inadequate disclosure
  - Excessive reliance on untested models and ratings
    - Rating agencies also had conflicts
  - Excess complexity and opacity of structures
- But most investors were sophisticated institutions
  - Yield seekers in benign environment
  - <u>Excess use of leverage</u> magnified losses
  - <u>Maturity mismatches</u> were prevalent (shades of the S&L crisis)
- Properly used securitization provides economic benefits
  - Spreads risks among diversified investors
  - Tranching matches risk with investor risk tolerances

Lesson #4: Need of Regulatory Reform

- Much of the sub-prime mess created outside the traditional regulated depository institution system
  - Unregulated loan brokers and non-bank specialist lenders
  - Lightly regulated investment banks and rating agencies
  - Need to bring these entities under stronger regulation and supervision
    - Treasury proposal to reform regulatory system
    - Capital requirements and counterparty limits for investment banks
- Depository regulation needs to be streamlined
  - Overlapping federal and federal state regulation and supervision should be eliminated
  - Harmonize depository and non-depository regulation and supervision

Lesson #4: Need of Regulatory Reform

- Inadequate consumer protection needs to be improved
  - FED and HUD need to coordinate on improved disclosure forms
  - But regulators should avoid overly proscriptive product and underwriting regulation
- Housing and Economic Recovery Act created stronger GSE regulator
  - But will it have the clout to exact meaningful reform?
- Basel II needs improvement
  - Too pro-cyclical
  - Too focused on capital; not enough on liquidity, systemic issues

What Not To Do

- Weaken legal protections for property owners and lien holders
  - Proposals to let bankruptcy courts modify loans is a bad idea that will increase the risk of lending
- Massive borrower and lender bailouts
  - We can't afford it
  - Moral hazard issues
  - But there are some institutions "too big to fail"
- Continued nationalization of the housing finance system
  - US has one of the most nationalized systems in the world; passing additional risk to the government is an unwise long term strategy

Primary Sources

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