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Lessons Learned from the Recent Turmoil in the Credit Markets

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TODAY'S DISCUSSION

1. An environment of credit and liquidity growth
2. The US mortgage market as the epicenter of the crisis
3. The concern over contagion
4. Implications and outlook
   - Winners and losers
   - Implications for select financial areas
5. Lessons for Professional Risk Managers

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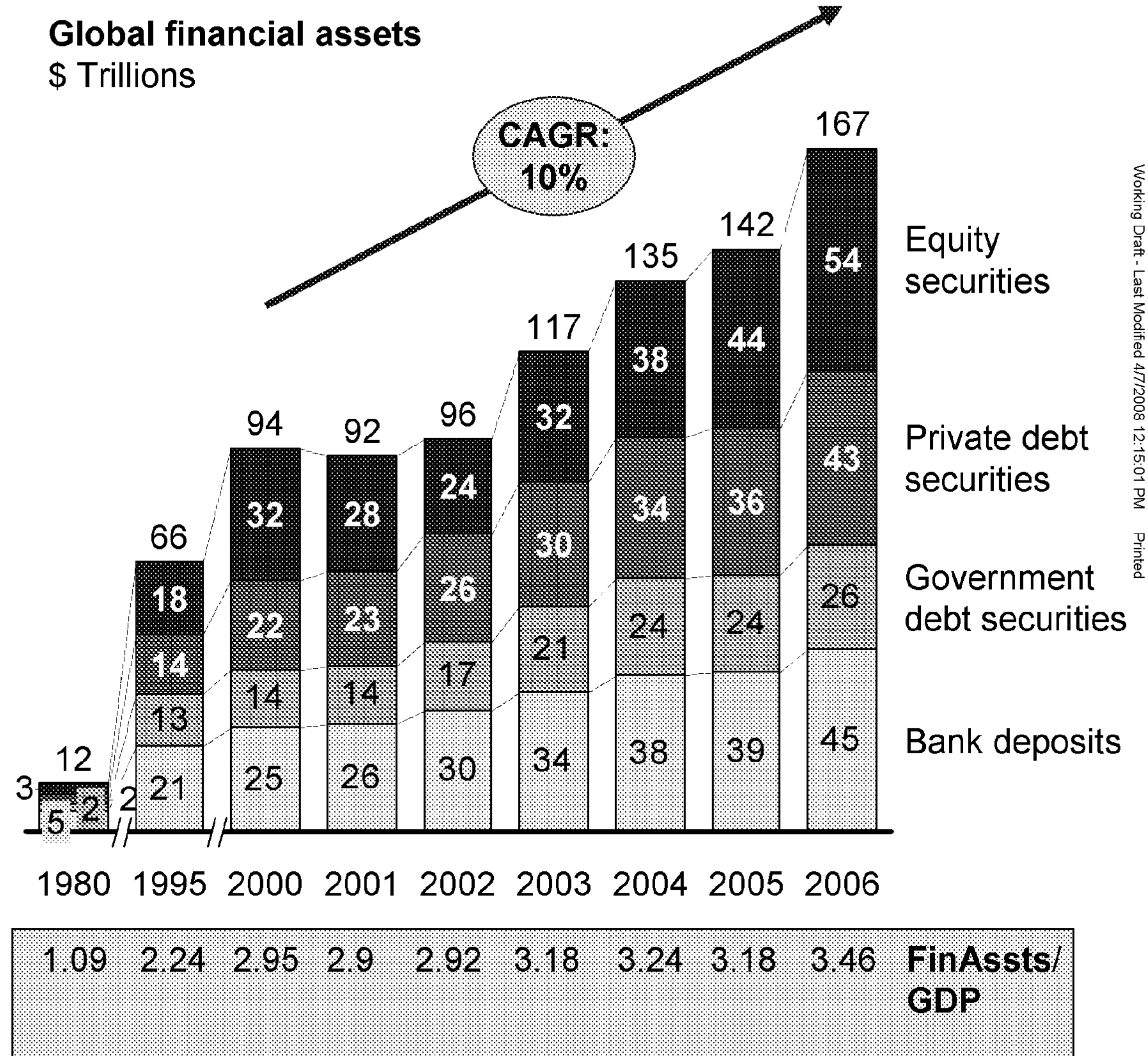
GROWING GLOBAL FINANCIAL ASSETS FOSTERED INCREASED LIQUIDITY AND CREDIT AVAILABILITY

- Global financial assets growing faster than GDP, rising from 1.1x GDP in 1980, to 2.2x GDP in 1995, to 3.5x GDP in 2006
- Demographic patterns: aging "baby-boomers" in developed markets accumulating financial assets
- Growing wealth accumulation in developing markets (e.g., China and India)
- Low global nominal and real interest rate, fostering high leverage



Year	1980	1995	2000	2001	2002	2003	2004	2005	2006
FinAssts/GDP	1.09	2.24	2.95	2.9	2.92	3.18	3.24	3.18	3.46

Source: McKinsey Global Institute; Global Financial Stock database

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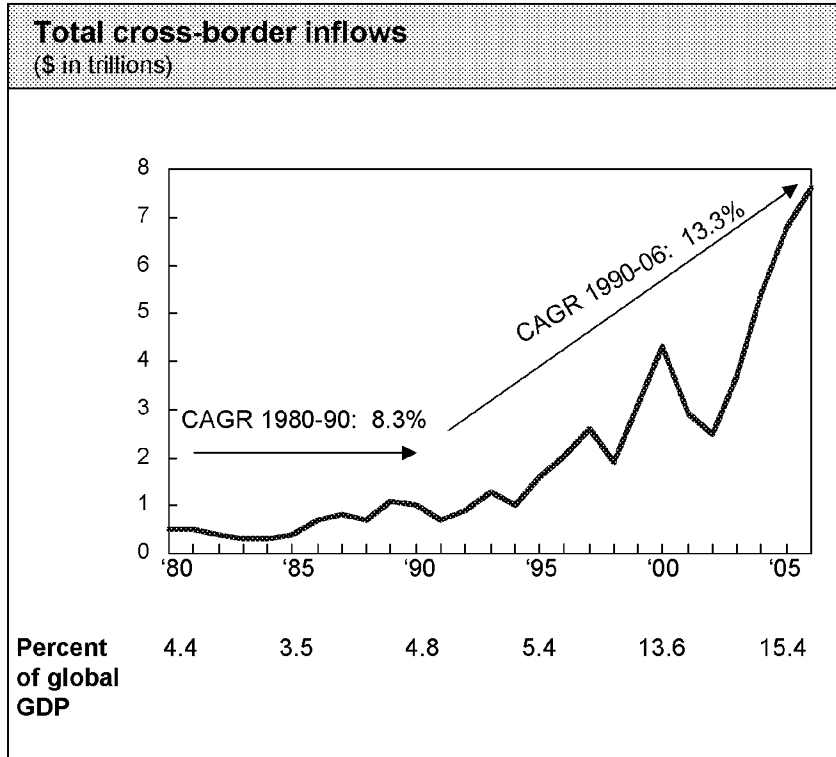
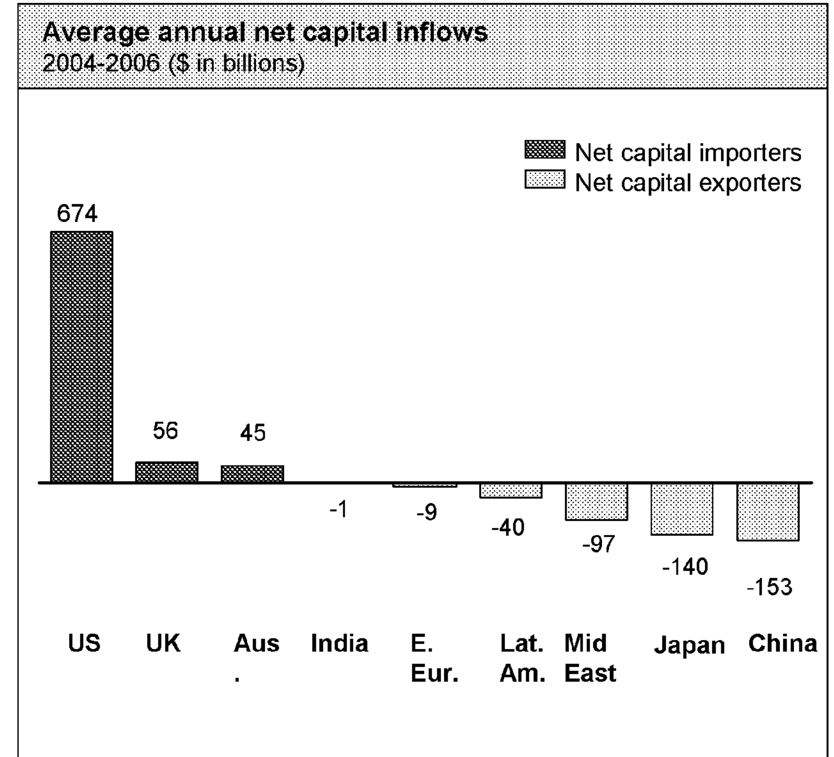
CROSS-BORDER CAPITAL FLOWS INCREASED SUBSTANTIALLY, WITH THE U.S. AS THE PREFERRED DESTINATION





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Source: McKinsey Global Institute; World Bank

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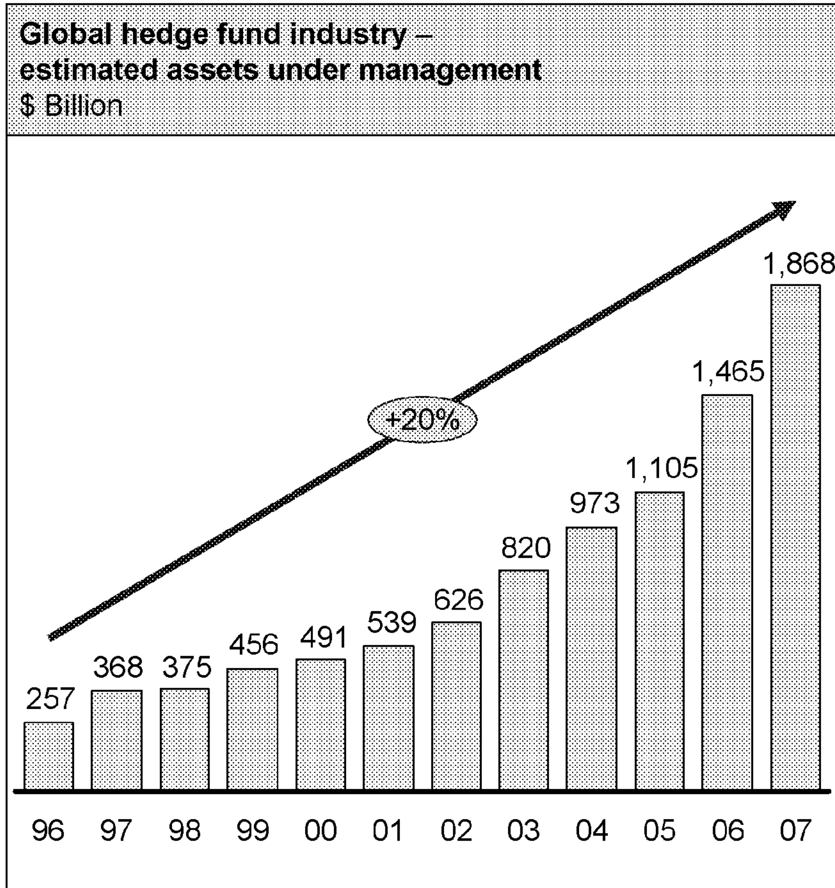
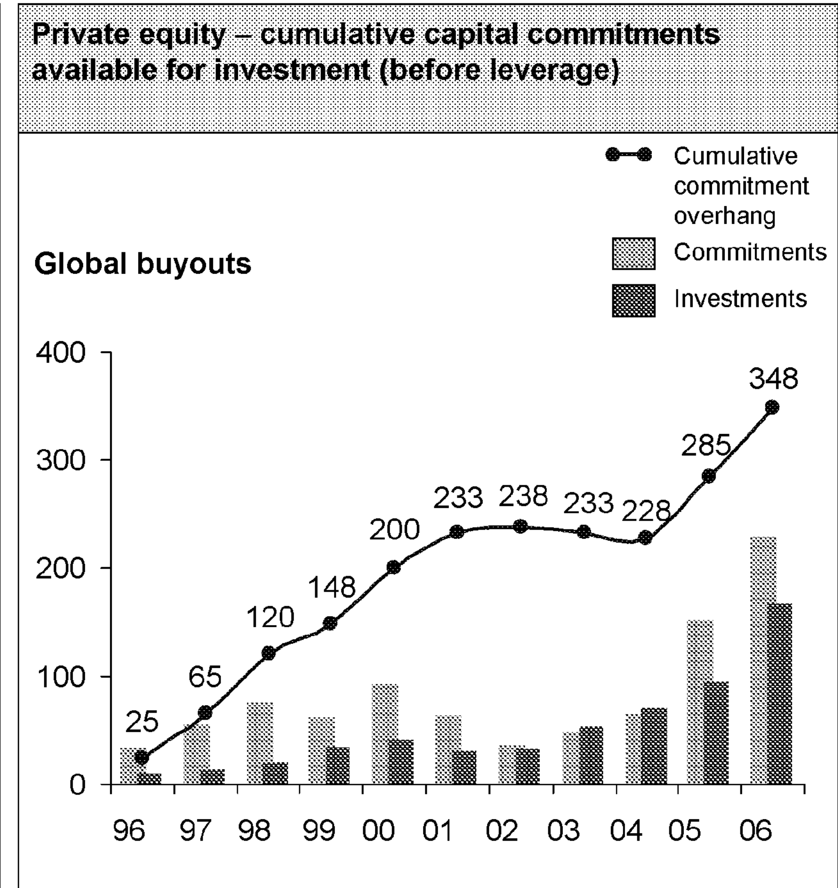
PRIVATE CAPITAL, SEEKING ATTRACTIVE RISK-ADJUSTED RETURNS, FURTHER FUELED LIQUIDITY





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Source: PE Intelligence; Hedge Fund Research (HFR.com), McKinsey analysis

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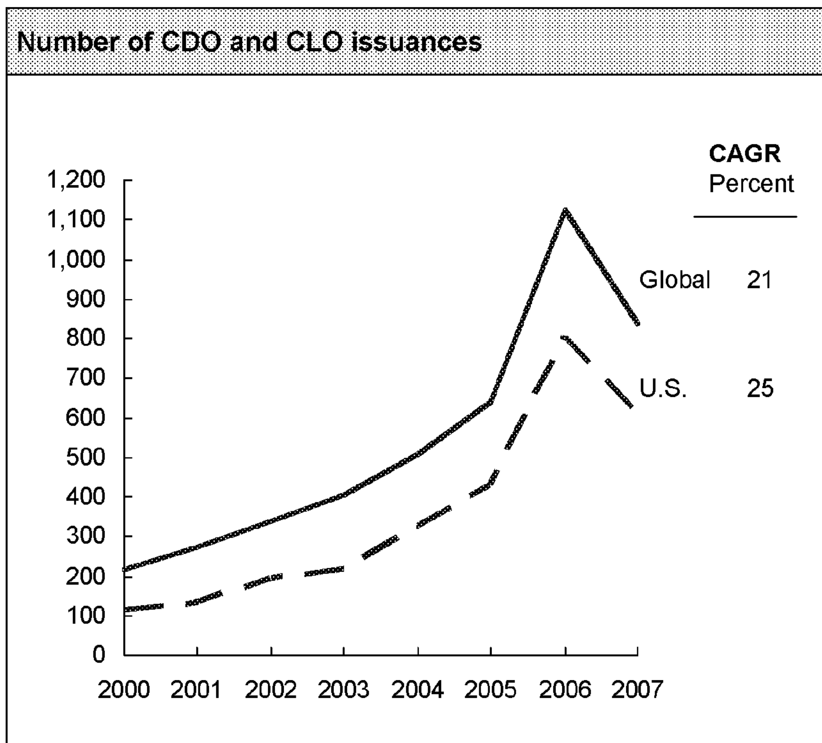
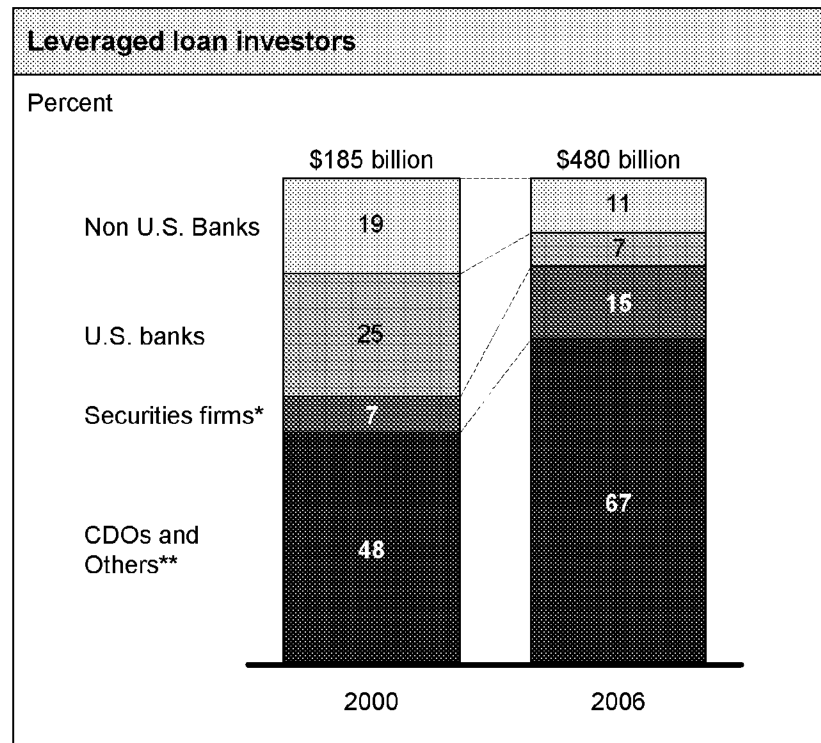
GROWTH IN CDOs AND CLOs, HELPED ESTABLISH THE "CDO BID" FOR LEVERAGED LOANS AND ABS





Rise of CDOs and CLOs, enables

- Broader set of credit investors (e.g., pension funds, insurers, hedge funds)
- Multiplicative effect on capital as investors in equity and mezzanine tranches further leverage their investments

CDOs and CLOs introduced new classes of investors to leveraged lending, further increasing liquidity

* Also includes finance companies and insurance companies
** Also includes hedge funds, prime-rate funds and high-yield funds
Source: LSTA, BBA, Fitch, S&P PMD; Standard and Poor's Leveraged Buyout Review

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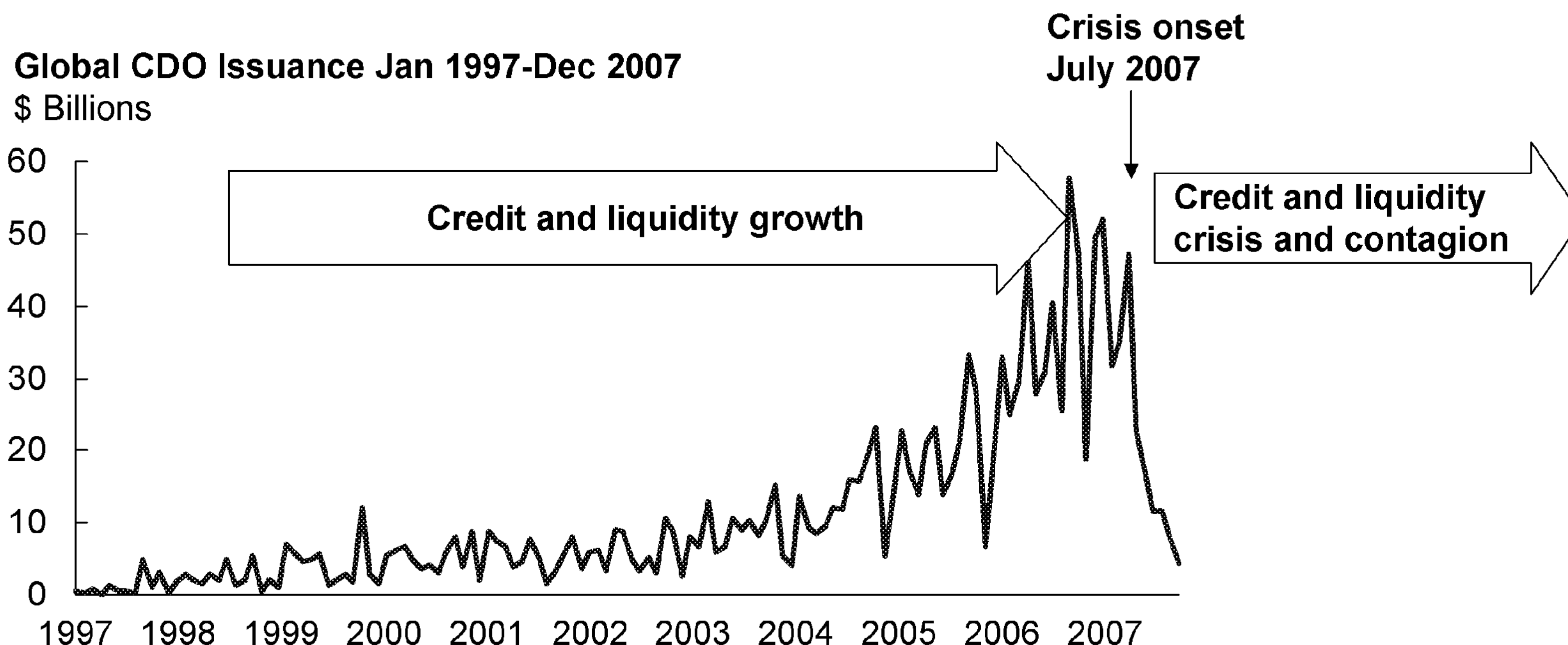
SINCE JULY '07, WE HAVE SEEN A REVERSAL OF CREDIT AND LIQUIDITY GROWTH WHICH PREVAILED FOR MOST OF THE LAST DECADE



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Main drivers of liquidity growth
- Growth in financial assets (e.g., equity, private and government debt, bank deposits)
- Increasing importance of private capital
- Entry of new investors into the market through innovative financial products (e.g., CDOs)

Triggers of liquidity crisis
- Complexity and opacity of subprime/CDO risk
- Risk mispricing
- Aggressive chase for yield

Areas of contagion
- Mortgage backed securities
- Wholesale funding market

Source: Dealogic

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   - Impact on interest in risk management

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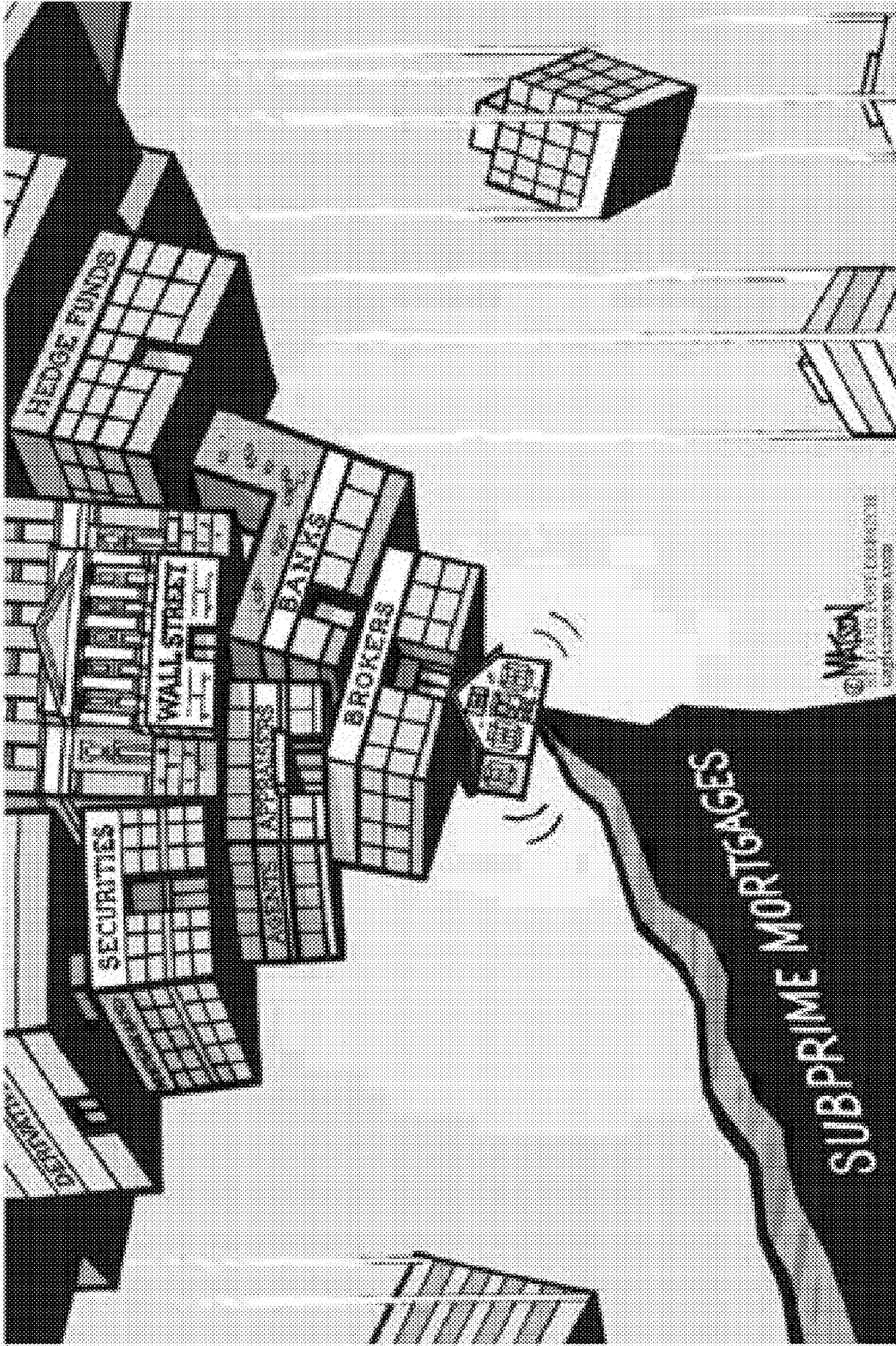
HEDGE FUNDS
WALL STREET
BANKS
BROKERS
SECURITIES
SUBPRIME MORTGAGES
"I THOUGHT WE WERE JUST BUYING A HOUSE!"

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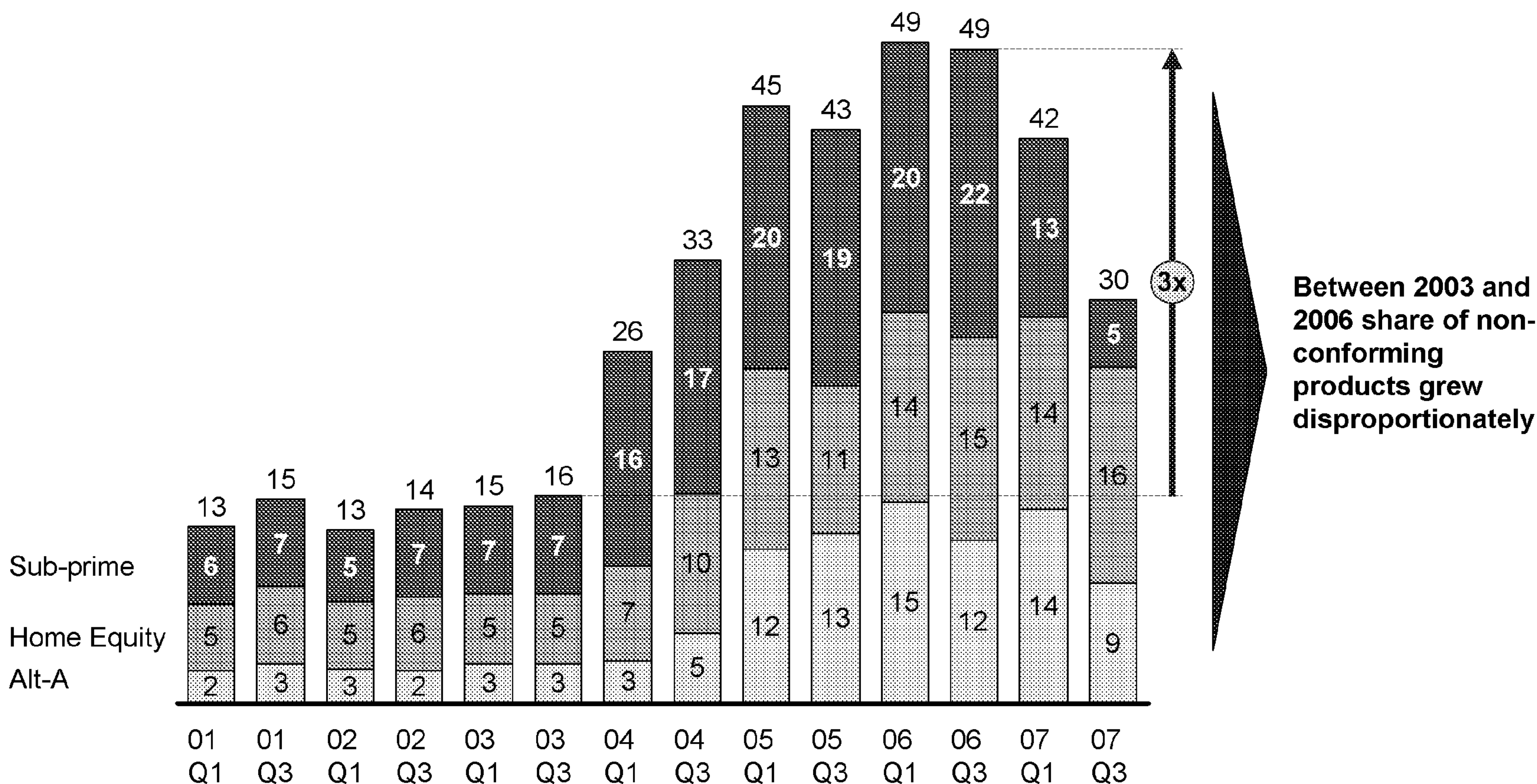
RISKIER MORTGAGES CONTINUED TO GROW SIGNIFICANTLY, REACHING ~50% OF MORTGAGE ORIGINATIONS IN 2006

Nonconforming* products as percentage of total mortgage originations



* Excludes Jumbo

Source: Mortgage Bankers Association, Census Bureau, Goldman Sachs Research Estimates

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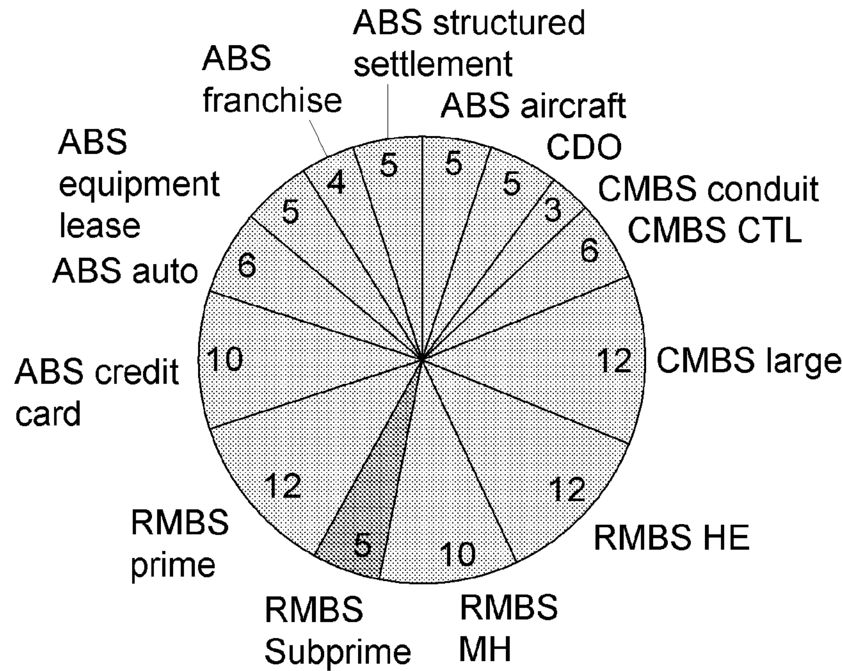
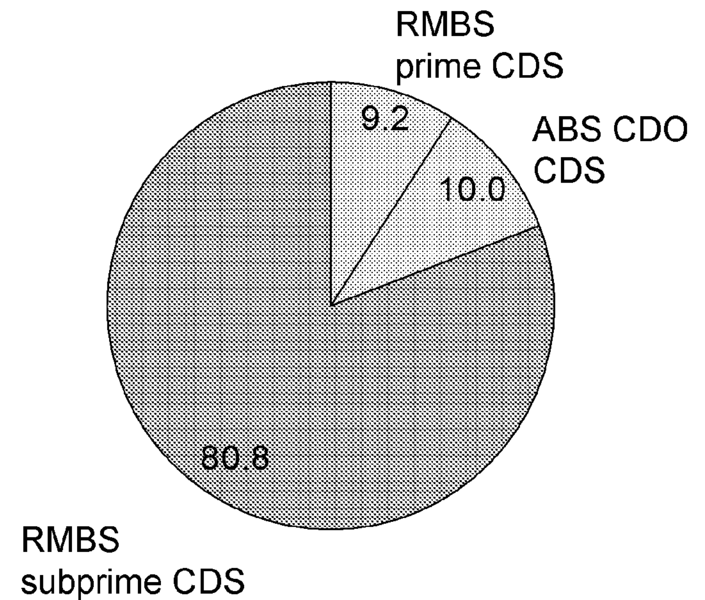
SUB-PRIME MORTGAGES BECAME THE DOMINANT UNDERLYING ASSET FOR MANY CDOs BY THE END OF 2006

Percent

Representative ABS CDO - 2002*



Representative ABS CDO - 2006*



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Note: ABS – asset-backed securities, CDO – collateralized debt obligation, CMBS – commercial mortgage-backed securities, CTL – credit tenant lease, RMBS – residential mortgage-backed securities, HE – home equity, MH – Manufactured housing, RMBS – residential mortgage-backed securities, CDS – credit default swap

* 2002 closed CDO issue by SFE CABS III CDO, Ltd, 2006 closed CDO issue by GSC ABS CDO 2005-1

Source: Fitch Ratings presale report

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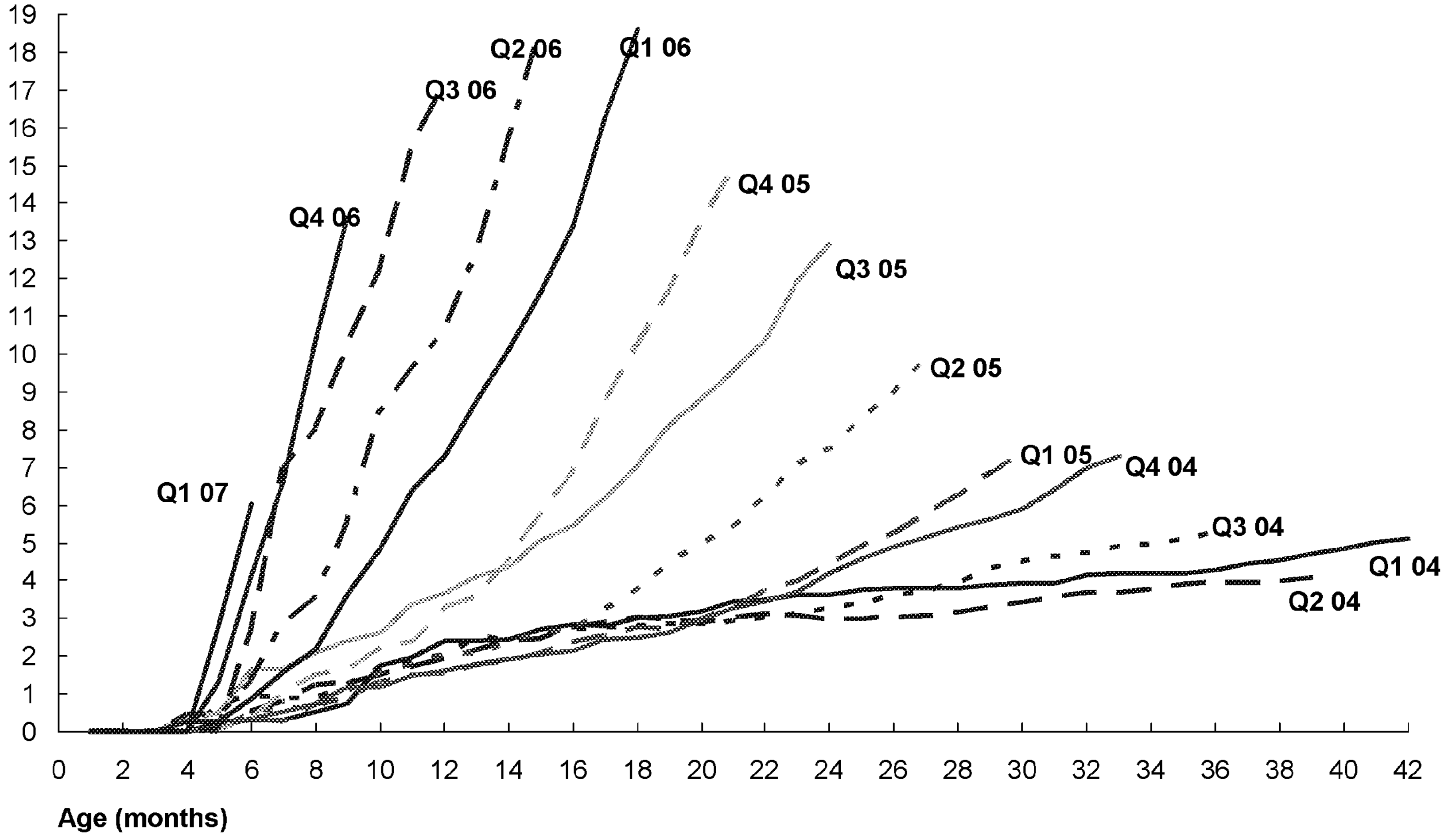
RISING US MORTGAGE AND HOME EQUITY LOSSES BECAME EVIDENT AS EARLY AS 2004

Static cumulative loss rates by vintage
Percent

DISGUISED EXAMPLE



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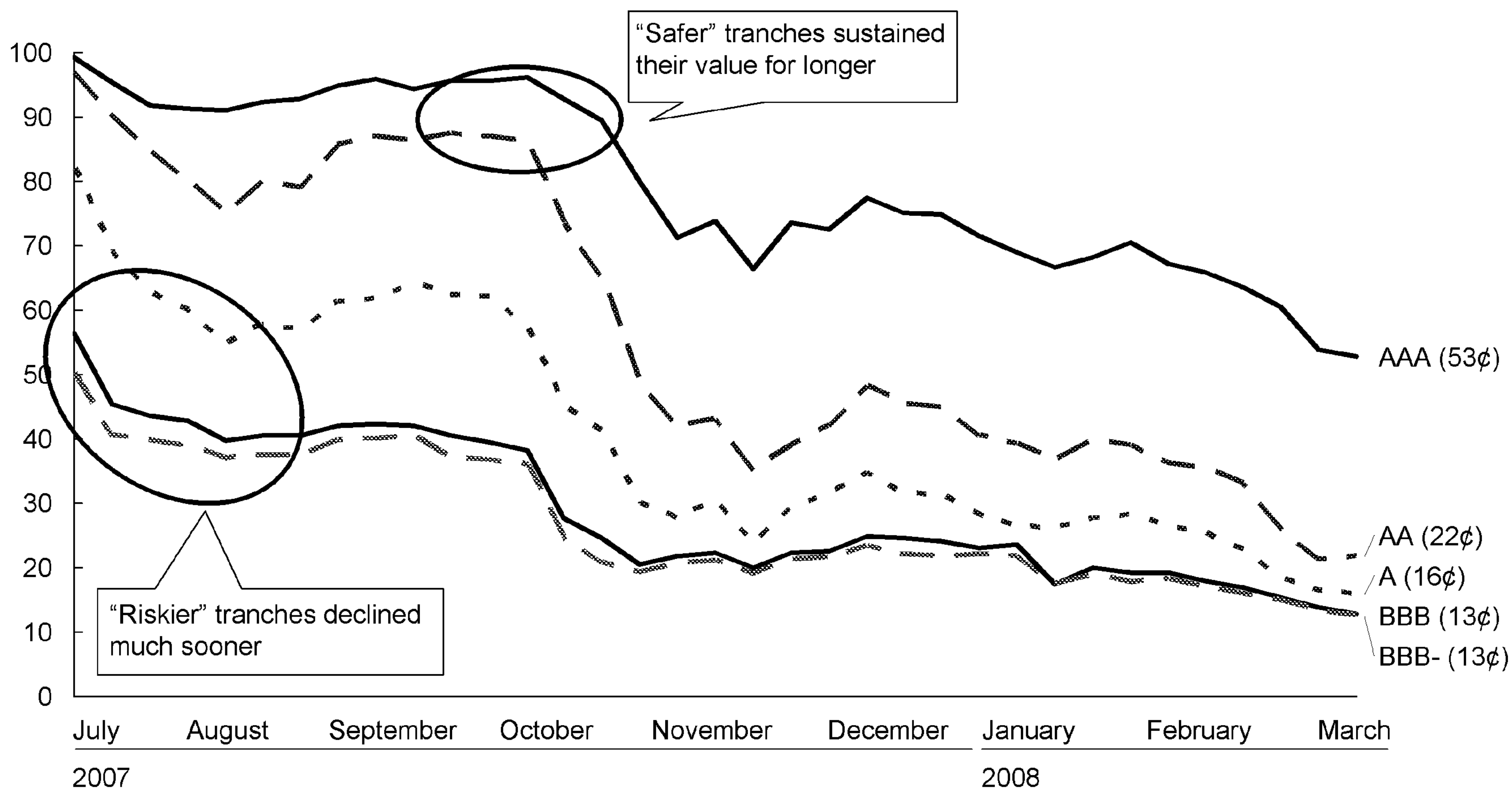
CDOs ACROSS RATING TRANCHES DECLINED SHARPLY IN VALUE, STARTING WITH THE RISKIER TRANCHES

Current value of CDOs of subprime mortgages
Tranches of ABX.HE.2007-2 index



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Source: ABX index values and home equity CDS spreads from Markit and JPMorgan

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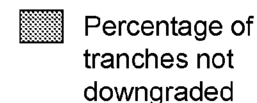
CDO RATINGS ARE BEING DOWNGRADED, SOMETIMES SEVERELY



2006 subprime transition table
Percentage of outstanding classes

Current rating level (after downgrades, if any)

Original rating level	AAA	AA	A	BBB	BB	B	CCC	CC	CW*
AAA	**53**								47
AA		**30**							70
A			**14**	5	7	11	57	4	2
BBB				**6**	4	6	69	12	3
BB					**1**	2	60	31	3
B						**1**	53	46	

U.S. cash flow and hybrid CDO of ABS-migration table
Vintage 1Q2005-3Q 2007

Current rating level (after downgrades, if any)

Original rating level	AAA	AA	A	BBB	BB	B	CCC	CC
AAA	**72**	17	6	2	0	0	2	0
AA		**70**	13	9	2	1	3	2
A			**64**	15	9	4	2	6
BBB				**57**	10	11	10	12
BB					**58**	8	14	20
B						**60**	20	20

* Credit rating withdrawn
Source: S&P, January 31, 2008; team analysis

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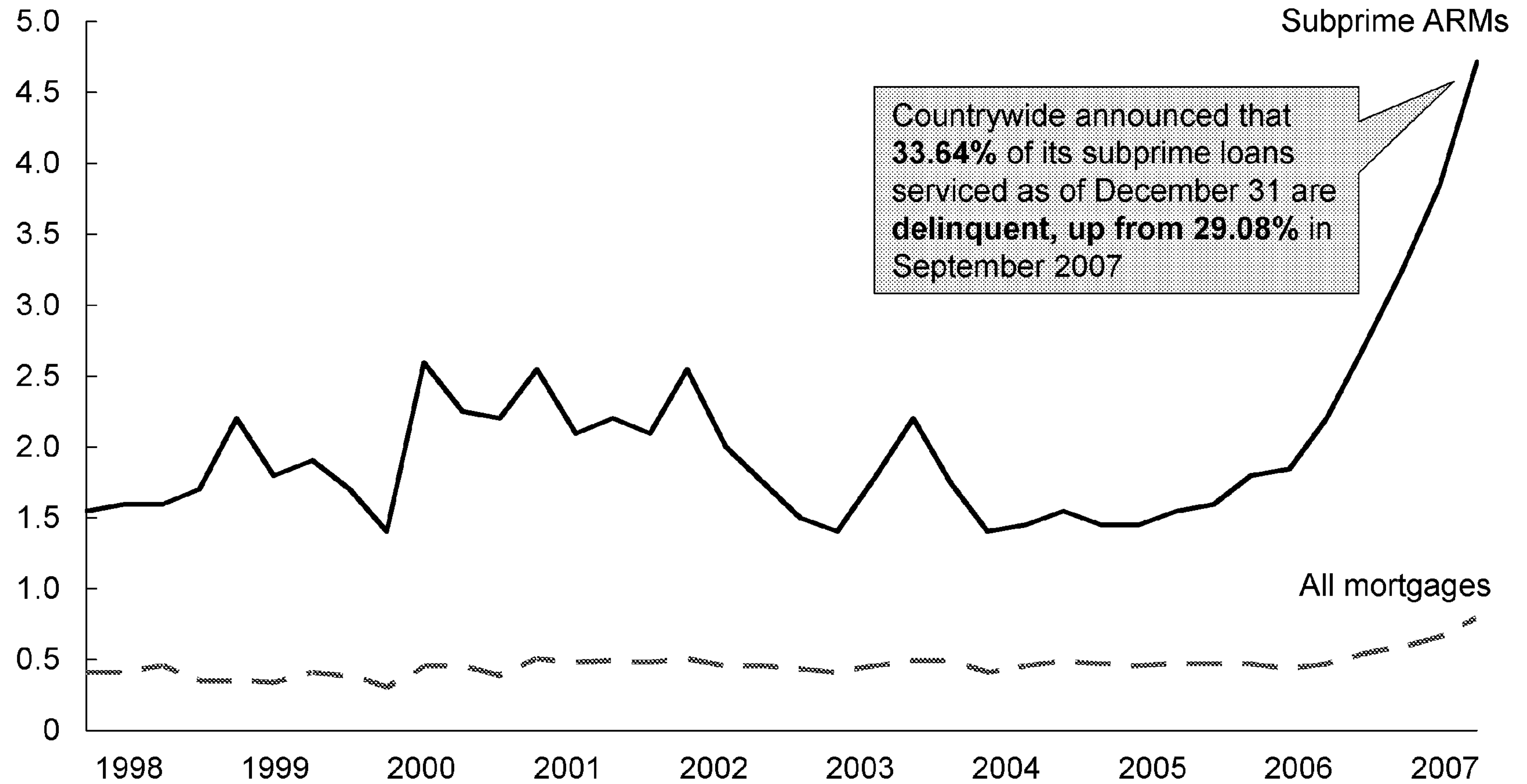
THE FINAL LEVEL OF LOSSES IS STILL UNKNOWN . . .

Percent of loans entering foreclosure by quarter (1Q 1998-3Q 2007)
Annualized rate



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Source: Mortgage Bankers Association, Goldman Sachs Research estimates

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ILLIQUIDITY SPREAD RAPIDLY TO OTHER ASSET CLASSES

	Post crisis onset events (July, 2007 onward)
Alt-A mortgages	• Moody's has changed its rating system for subprime-like loans, low/no equity loans, and low/no documentation ("liar's") loans as loss estimates for these loans have increased substantially
Jumbo mortgages	• Difference in interest rate between conforming mortgages (under $417,000) and prime nonconforming mortgages (>$417,000) grows to ~100 basis points
Disappearance of the CDO bid	• Moody's has downgraded 19% of the securities created from 2006 subprime mortgages they rated and put 30% on a watch list • Fitch warned that numerous classes of CDOs are on watch for a downgrade because the subprime debt resold into CDOs had been downgraded or put on watch for a downgrade
Leveraged lending	• Banks negotiating for better terms on leveraged deals to clear $250-300 bn in high yield bond backlog • Over 40 pending buyouts valued at $1 billion or more currently awaiting close and potentially in jeopardy (e.g., Sallie Mae transaction aborted)
Asset-backed commercial paper	• Over $200 billion in assets financed through the ABCP conduits moved back on banks' balance sheet • Coventree, leading third party Canadian ABCP conduit, forced to restructure following inability to roll over commercial paper and unavailability of liquidity backstop lines
Quantitative hedge funds	• Goldman Sachs (along with Perry Capital and other investors) injected $3 billion into the firm's Global Equity Opportunities Fund; Goldman's Global Alpha lost 27% of its value; AQR and Renaissance report similar declines
Unwinding of the carry trade	• Sudden declines in other currencies on the opposite side of the carry trade (e.g., New Zealand dollar and Australian dollar) accompanied by rise in the yen

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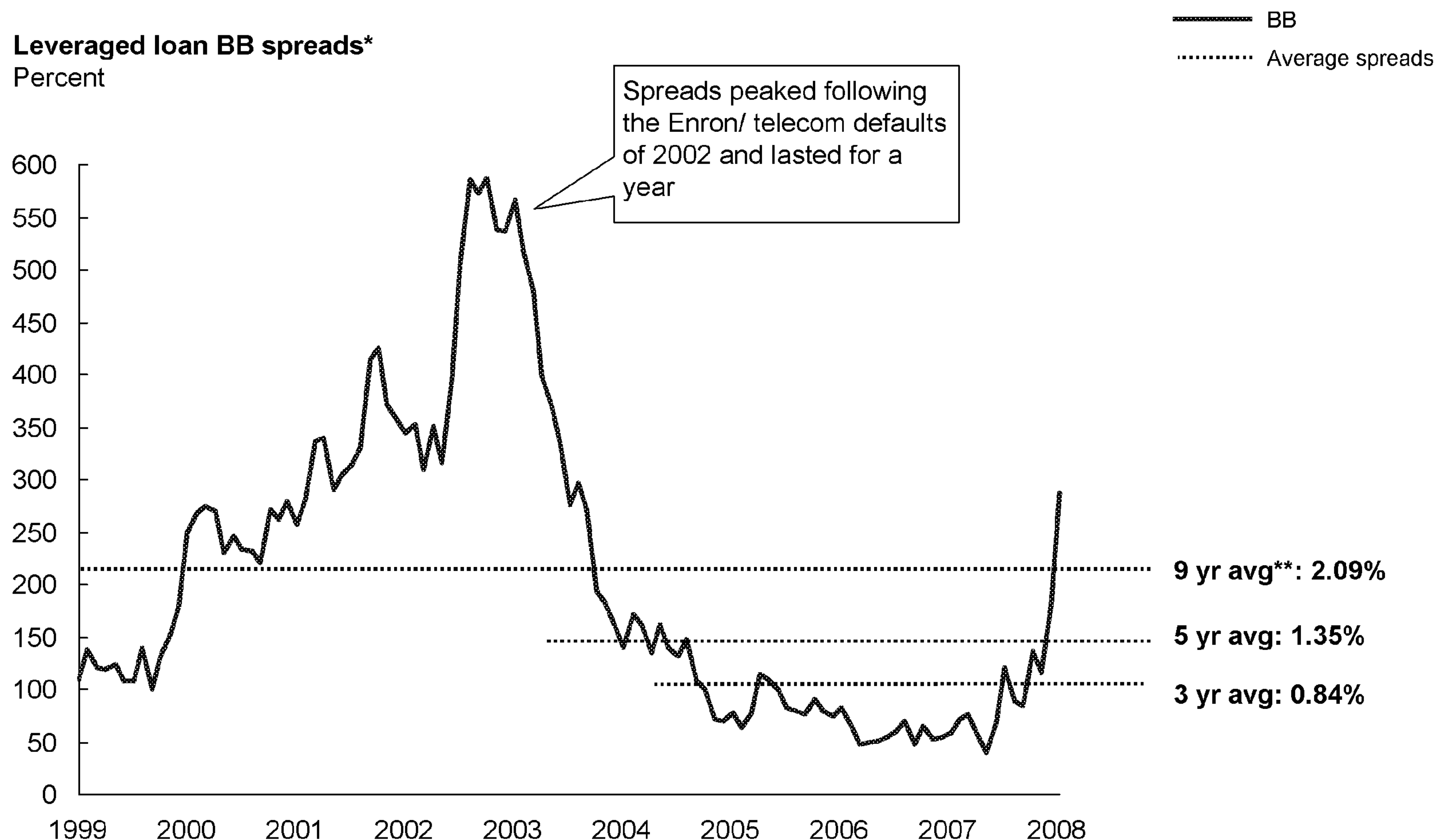
THE CRISIS CAUSED AN INCREASE IN THE "PRICE OF RISK" WITH CREDIT SPREADS MOVING FROM TOO LOW TO QUITE HIGH



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* 3 months BB - US Composite over 3M LIBOR
** 9 year average (since 1/99), 5 year average (since 1/03), 3 year average (since 1/05)
Source: LCD; Moody's; Reuters; McKinsey analysis

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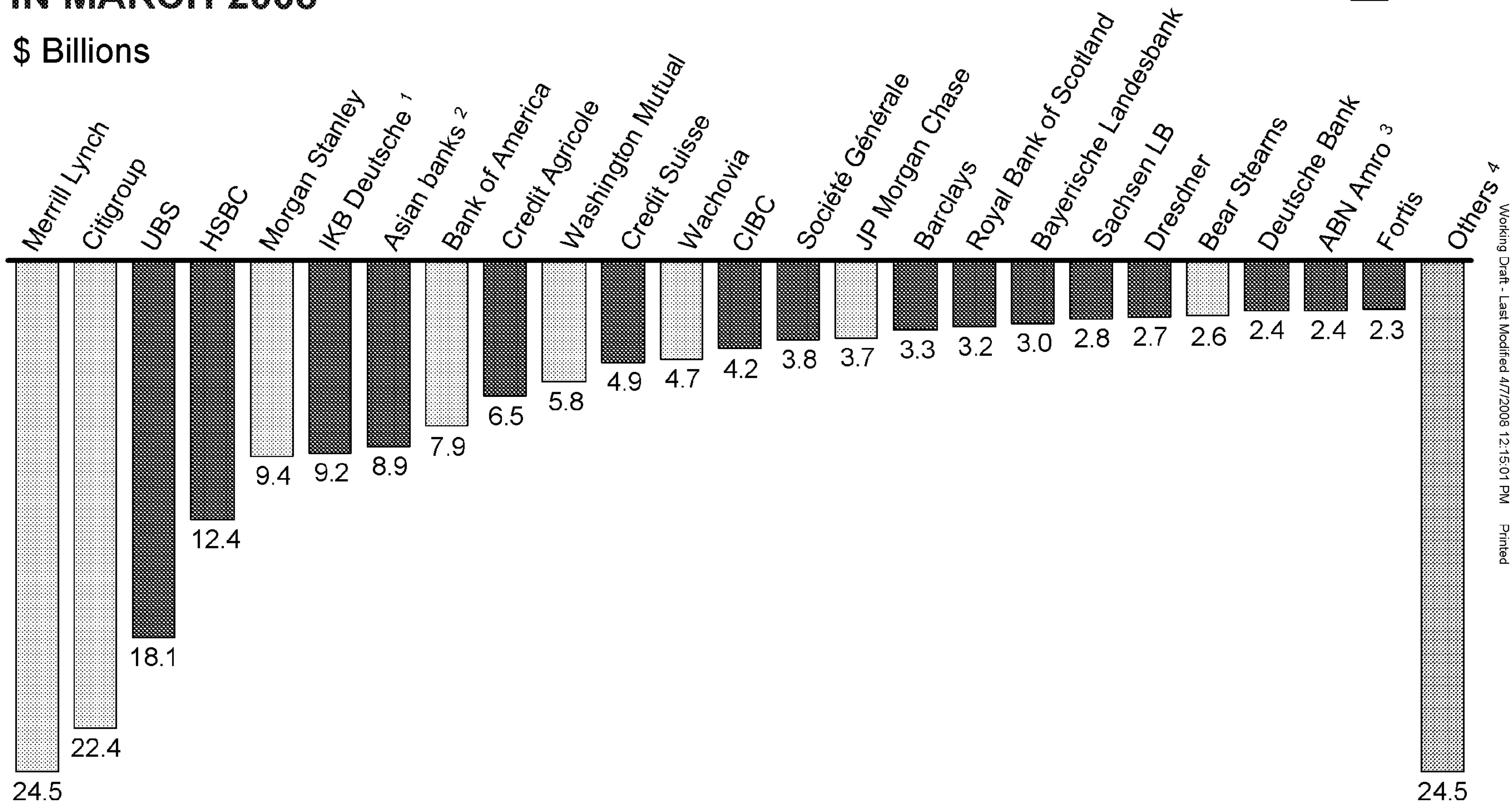
GLOBAL WRITEDOWNS REACHED ~$195 BILLION IN MARCH 2008

$ Billions



1 IKB parent company KfW Group absorbed ~$7 billion of the writedowns resulting from an off-balance-sheet fund IKB controlled as part of its bailout of the German bank.
2 Includes Mizuho, Nomura, Bank of China, Mitsubishi, Sumitomo Mitsui, Shinsei, Sumitomo Trust, Aozora Bank, DBS Group, Australia & New Zealand Banking Group, Abu Dhabi Commercial and Arab Banking Corp
3 ABN Amro Holding NV was acquired by Royal Bank of Scotland Group Plc, Fortis and Banco Santander SA. The assets written down were parceled out to acquiring banks. RBS reduced the value of ABN Amro assets it was incorporating into its balance sheet by 978 million pounds ($1.9 billion). This figure isn't included in the RBS writedown number on the table. The other buyers didn't specify their share of the ABN writedown.
4 Includes Wells Fargo, Lehman Brothers, DZ Bank, National City, BNP Paribas, and other North American and European banking institutions.
Source: Standard and Poors; WSJ, Market Watch, various financial news, McKinsey analysis

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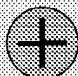
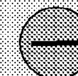
TO DATE, THERE ARE LIKELY SOME WINNERS AND MANY LOSERS



- **Well-capitalized, prudently funded, highly-rated institutions** that will weather the crisis and be able to make intelligent strategic investments at attractive prices
- **Nimble proprietary investors** that can take advantage of mispriced assets
- **Distressed debt investors** with substantial 'dry powder' available for investment at once again attractive spreads
- **Emerging markets**, which appear to have been somewhat insulated from the turmoil (at least until Jan' 08)



- **Owners of credit assets purchased at improbably narrow spreads**. The subprime mortgage market is filled with examples, some of which are well-known
- **Residential real estate owners** in badly-affected markets, including Florida, Nevada, Arizona and California
- **Institutions with imprudent levels of leverage** and **overly reliant on the** availability of the **securitization markets**
- **Investment banks with a heavy dependence on the mortgage markets**
- **Rating agencies** (particularly their structured credit groups)
- **Mortgage guarantors, credit guarantors and GSEs**

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FUTURE IMPLICATIONS FOR SELECT FINANCIAL AREAS

	Description
1 Bond insurers	• Likely downgrades of insurers with high exposure to subprime or inability to adhere to new liquidity requirements absent additional capital injections • Likely shifts in governance and ownership as banks originate bail-out packages to offset potential mark-to-market downgrades of their assets
2 Retail credit	• Tighter credit environment will impact consumer spending • Increased credit card defaults (e.g. 10% rise since Jan 2007) will add further strain on banks' capital and reserve requirements
3 High yield corporate credit	• Return to stricter underwriting standards • New structures of credit originators (e.g., hedge funds, private equity, pension funds) to cover the demand for credit not satisfied by banks due to the credit squeeze
4 Commercial real estate	• Tighter credit will reduce potential for new deals • A slowdown in the real economy will further put pressure on commercial real estate
5 Financial sector revenues	• Reduced economic activity combined with difficult credit and liquidity environments will have a major effect on industry revenues and product mix • Europe should be more resilient; emerging markets will gain prominence
6 Financial sector liquidity	• Reduced economic activity and difficult credit and liquidity environments have a major effect on industry revenues and product mix • Europe should be more resilient; emerging markets will gain prominence

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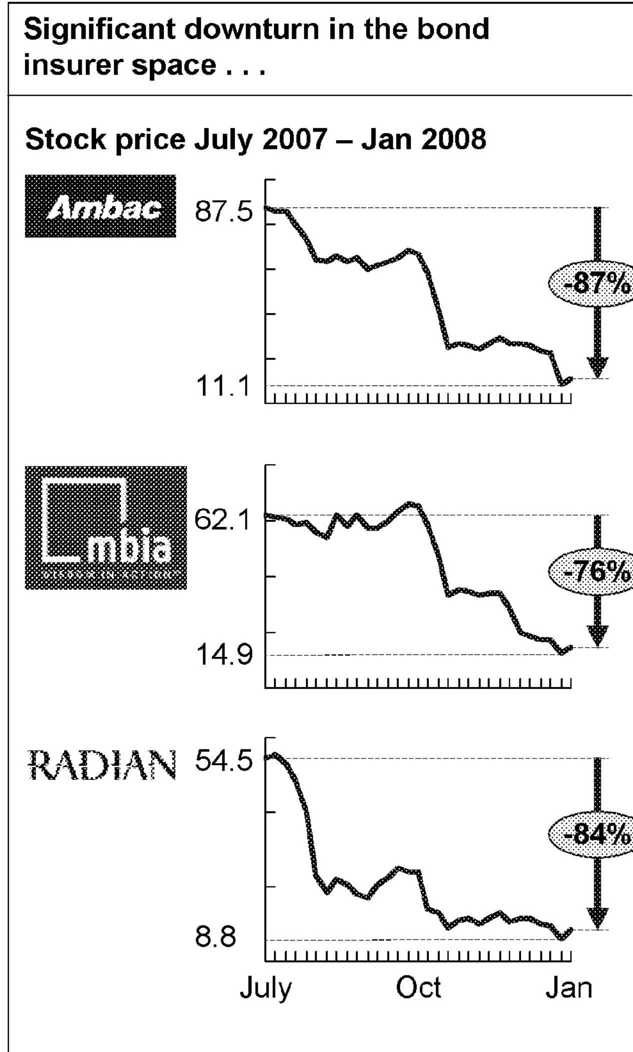
LIQUIDITY CRISIS WILL LIKELY LEAD TO EXITS, CONSOLIDATION AND SHIFTS IN GOVERNANCE STRUCTURE IN THE BOND INSURER SPACE

Significant downturn in the bond insurer space . . .

Stock price July 2007 – Jan 2008



. . . will give rise to 4 likely scenarios

Scenario	Rationale	Implication
Exit market	• Insurers with significant subprime exposure or inability to raise capital requirements will be unable to maintain rating (e.g., ACA)	• Likely **concentration** across insurers with little exposure and **exit** of high subprime exposure insurers • Potential **changes in ownership and governance**, as banks could acquire significant shares in insurance business to mitigate expected balance sheet losses from asset downgrades
Run-off book	• Insurers with sufficient existing business/high residual earnings may be downgraded but continue to manage previously originated business	
Raise money	• Different options depending on – Level of distress – Governance structure (e.g., PE owned vs. public)	
Bail-out	• Banks with significant economic interest can invest to offset potential mark-to-market exposures that would result from downgrades	

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Source: Bloomberg, team analysis

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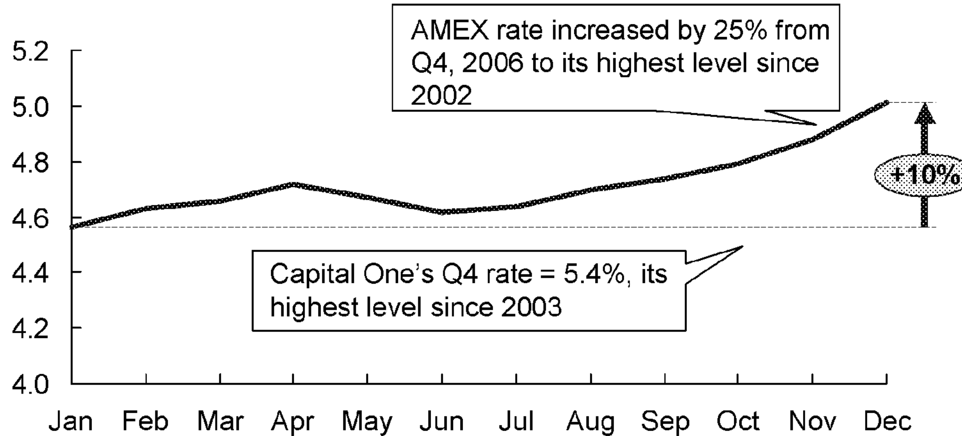
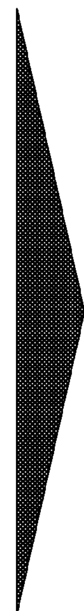
RECENT UNEMPLOYMENT TRENDS AND DELINQUENCY RATES SHOW THAT HIGHER CHARGE-OFFS ARE STILL TO COME

Credit card charge off rate and unemployment rate
Percent

Unemployment rate
Industry charge off rate
Recession

Average US credit card delinquencies - 2007
Percent





- Increasing unemployment and delinquency rates will lead to increasing losses for commercial banks
- Collection function will become increasingly important to prevent future losses

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Source: Card Data; Bureau of Labor Statistics; Team analysis

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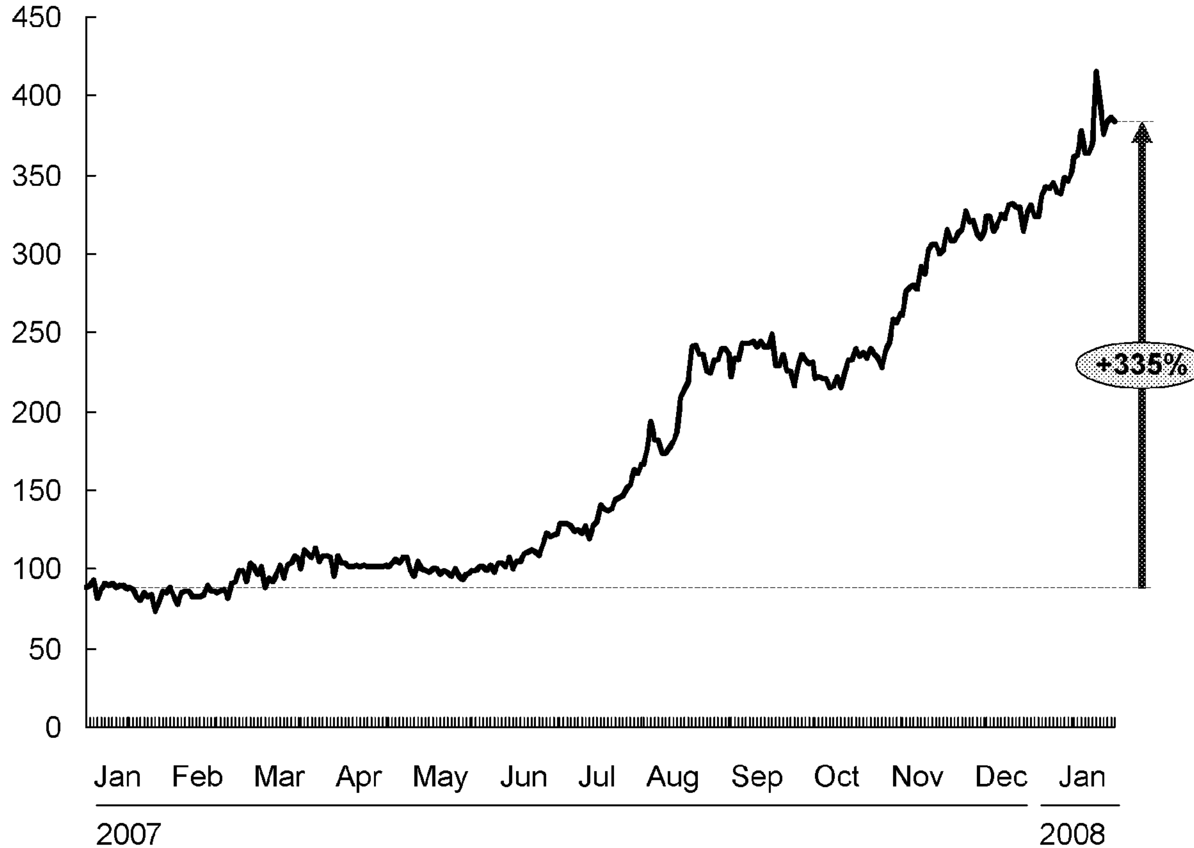
YIELD SPREAD ON HIGH YIELD BONDS INCREASED MORE THAN 3x OVER THE LAST YEAR

BB - US Composite 3 Months spread*
bps



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* Over 3 Month T-bill
Source: DataStream

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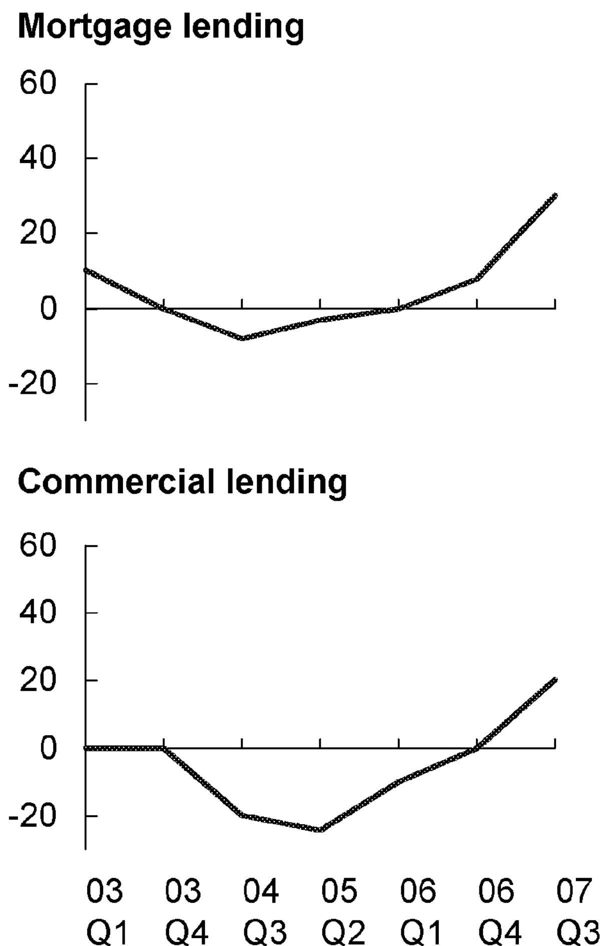
IN 2007 ALL LENDING EXPERIENCED STRICTER STANDARDS AS A RESULT OF THE IMMINENT CRISIS

Net percentage of U.S. banks tightening lending standards

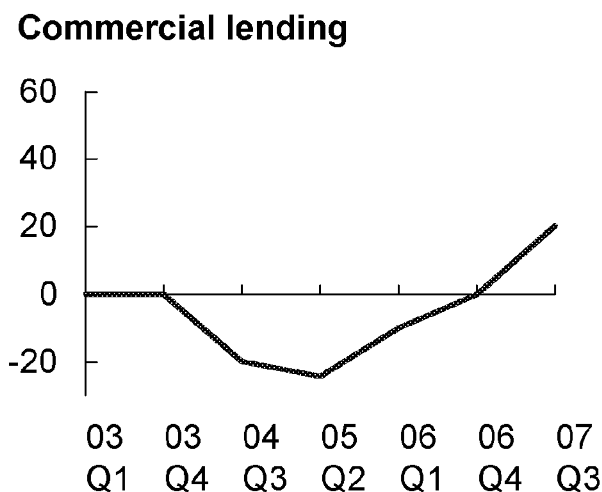
Percent

Mortgage lending

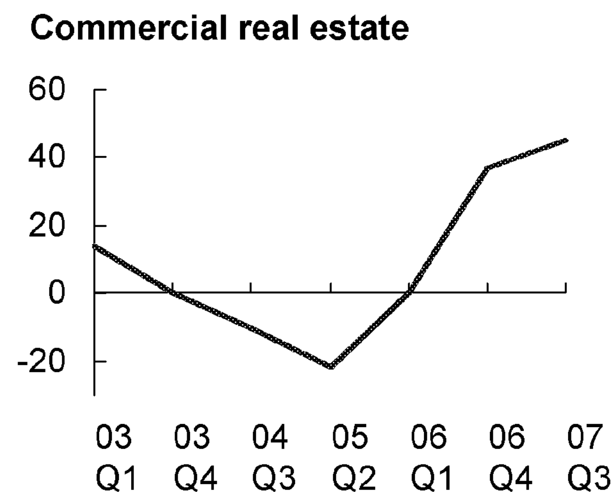


Credit cards & other retail loans

Commercial lending



Commercial real estate



Note: Y-Axis shows percent of respondents who tightened lending standards

Source: Federal Reserve

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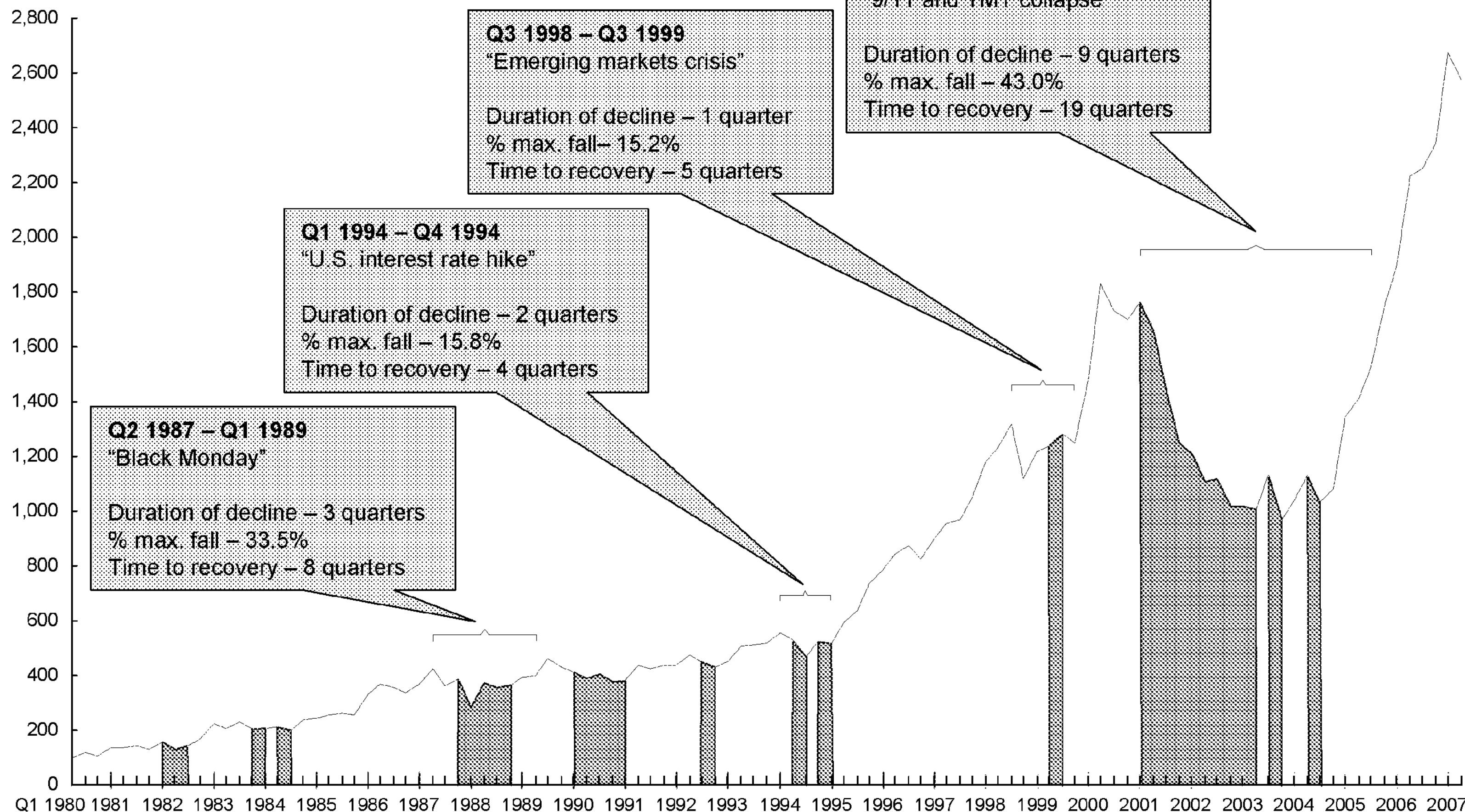
PREVIOUS MARKET DOWNTURNS EFFECT ON REVENUES OF THE U.S. SECURITIES INDUSTRY



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* Extracted from aggregated income statement, selected balance sheet, and employment data on the U.S. domestic broker-dealer operations of all NASD and NYSE member firms doing a public business derived from their Financial and Operational Combined Uniform Single (FOCUS) Report filings

Source: SIFMA; McKinsey analysis

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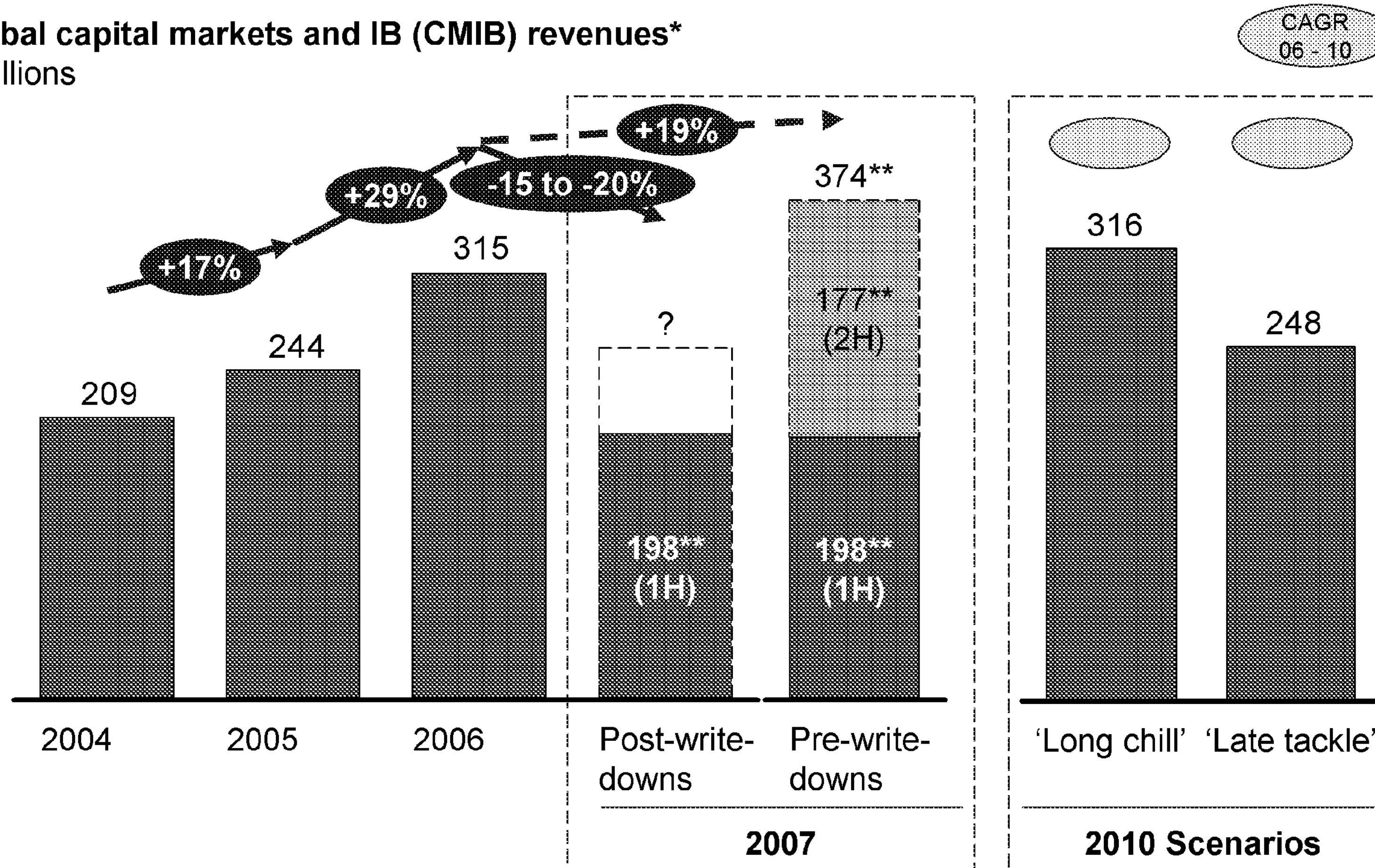
MCKINSEY'S SCENARIOS SUGGEST CAPITAL MARKETS ARE LIKELY TO REMAIN SOFT THROUGH 2010



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* Sales and trading, ECM, DCM, loan origination and syndication, and M&A revenues.

** Estimates based on results of ten Global players, which may over-state total industry growth given relative out-performance by leading firms, plus third quarter results from November year end firms leading firms, plus third quarter results from November year end firms

Source: Company reports; McKinsey Global Capital Markets Revenue Pool

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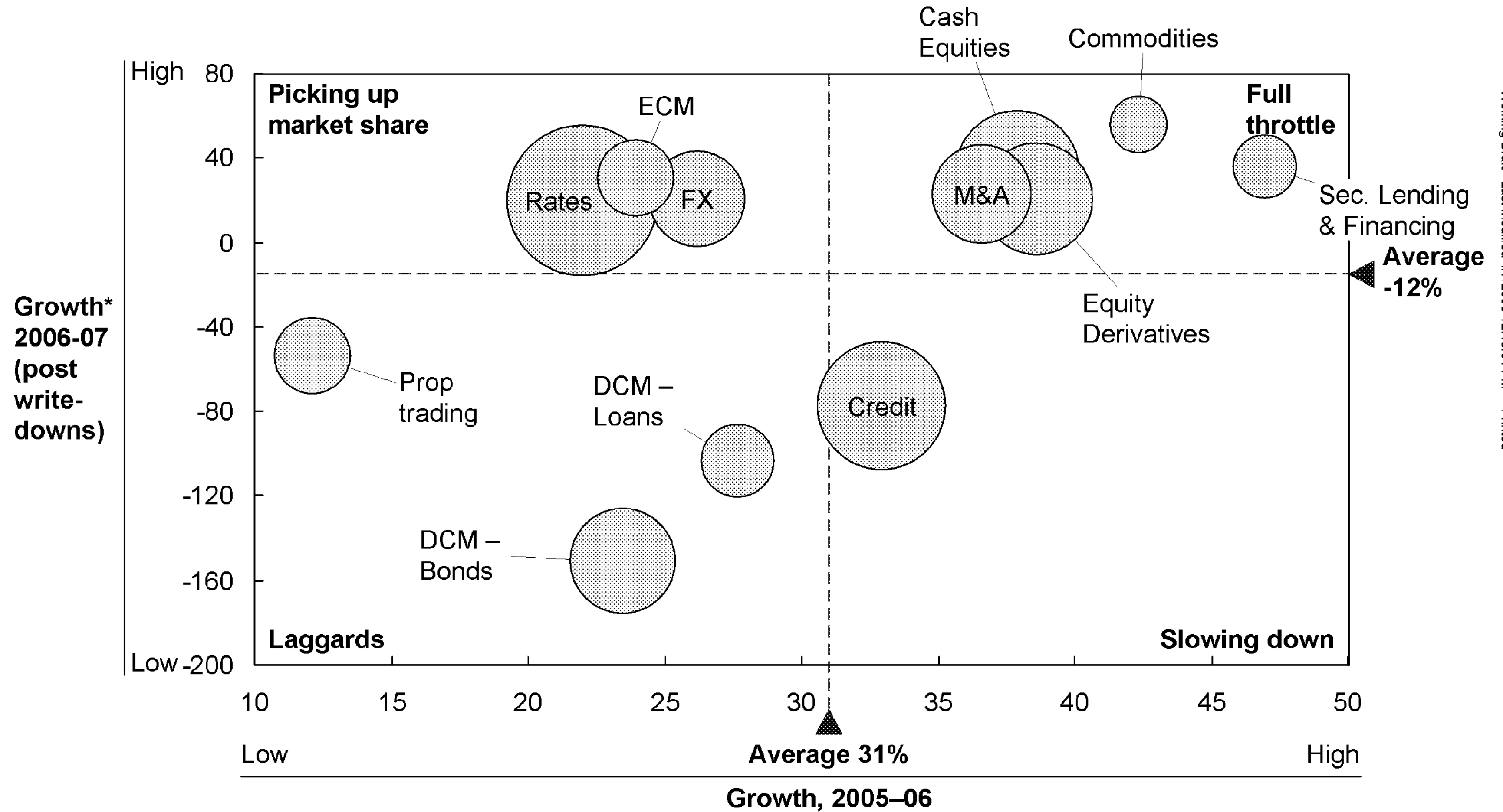
WIDE VARIATIONS IN PERFORMANCE ACROSS PRODUCTS DURING 2007

Global securities revenues growth
Percent



Note: 2007 results include estimated write-downs
Source: McKinsey Global Capital Markets Revenue Pool; team estimate

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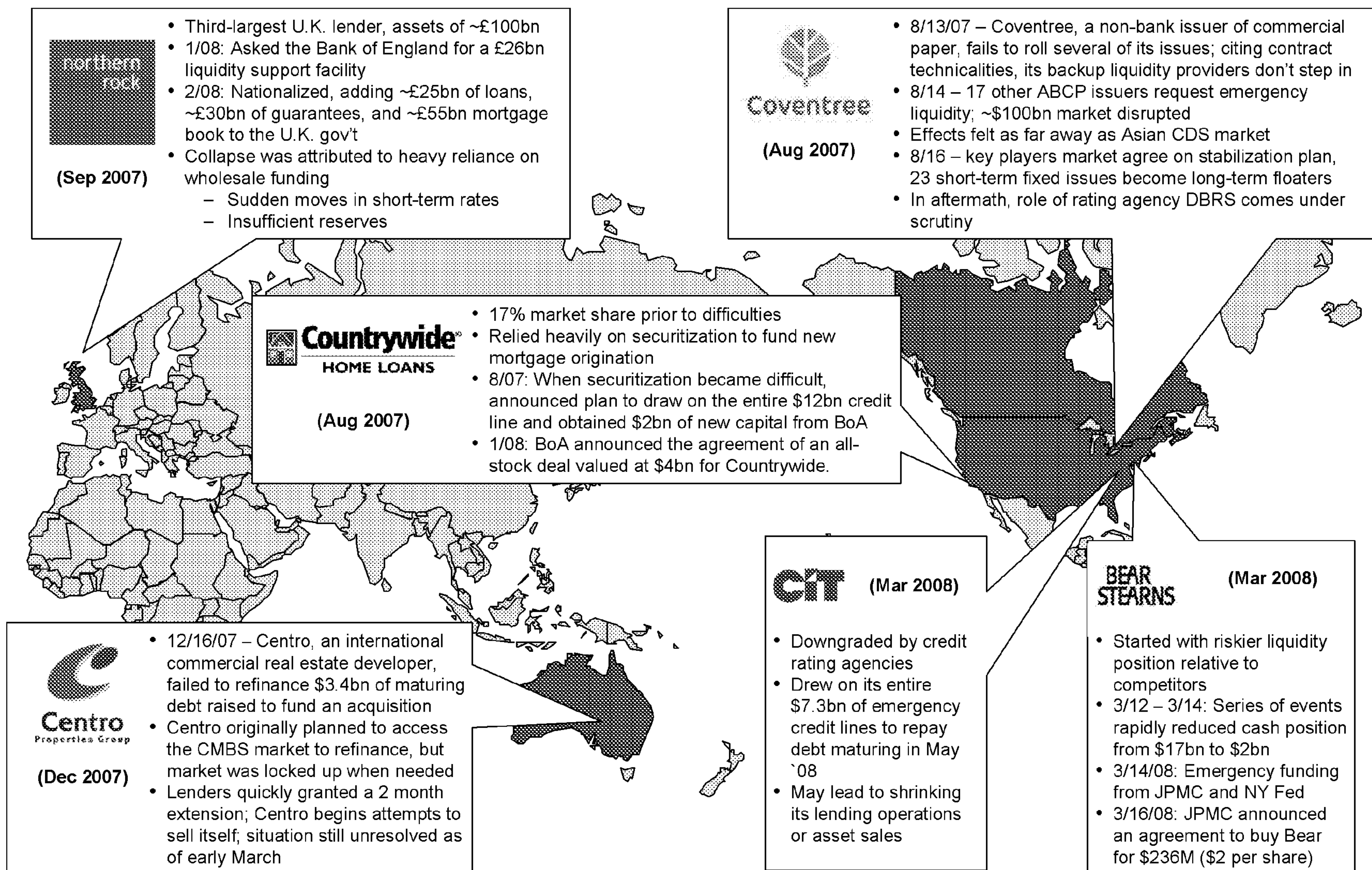
Several institutions around the globe have been threatened by major liquidity problems



Source: Bloomberg, literature search

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A liquidity crisis can arise for an institution in several ways

- **Bank run**: Depositors or other customers with demand accounts withdraw deposits faster than bank can liquidate assets

- **Failure to securitize**: Institutions within an "originate-to-distribute" business model are obliged to fund loans that they are unable to securitize

- **Failure to renew borrowings**: Short-term commercial paper or other borrowings (e.g., repo agreements) come due and investors decline to support new borrowing on viable terms (e.g., haircut sharply increased)

- **Change in trading terms**: Derivative counterparties require cash collateral or other changes to collateral to back mark-to-market value of derivative contracts

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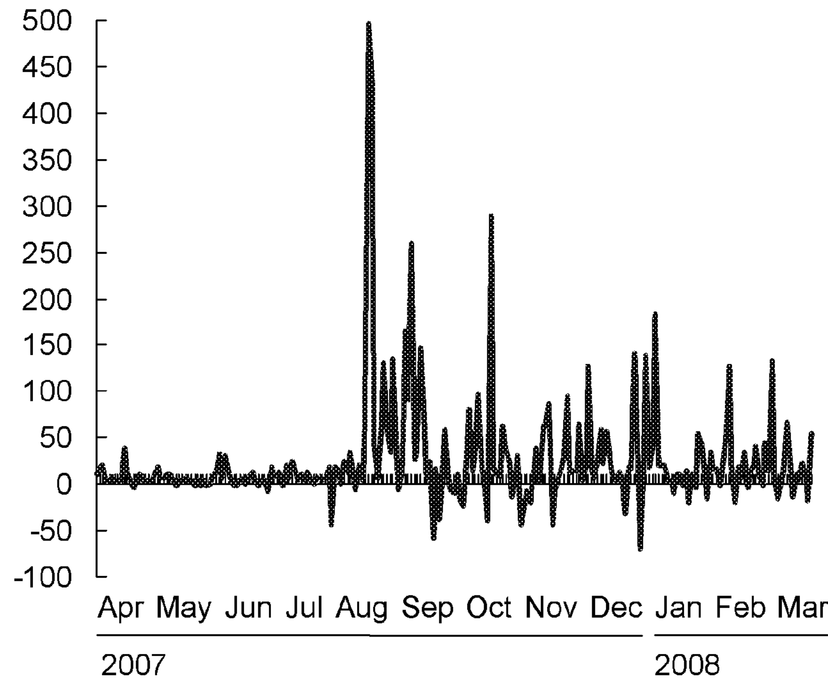
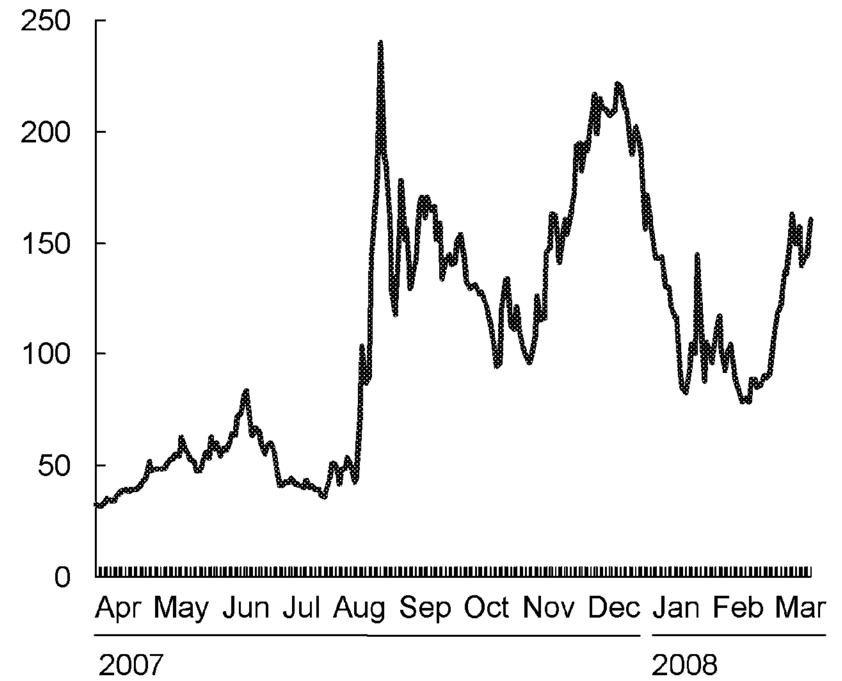
Liquidity evaporated in the interbank market in mid-2007 and has yet to fully return

LIBOR overnight rates spread*
bps, 2007-2008



LIBOR 3-month rates spread**
bps, 2007-2008



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* Over Fed funds rate
** Over U.S. 3 month Treasuries
Source: Bloomberg

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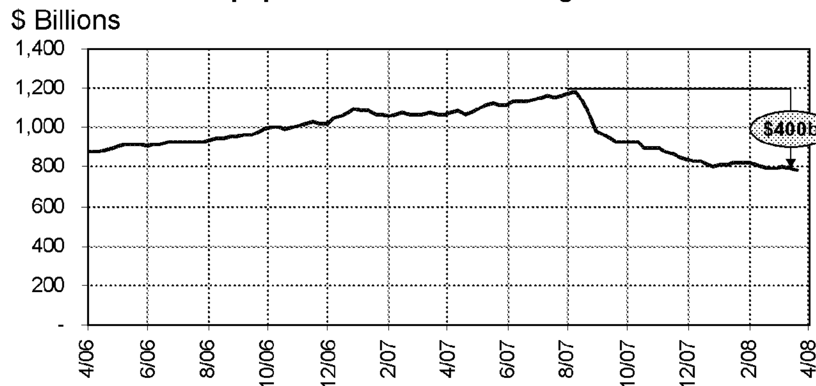
Access to short-term liquidity was severely reduced by disruptions in key markets

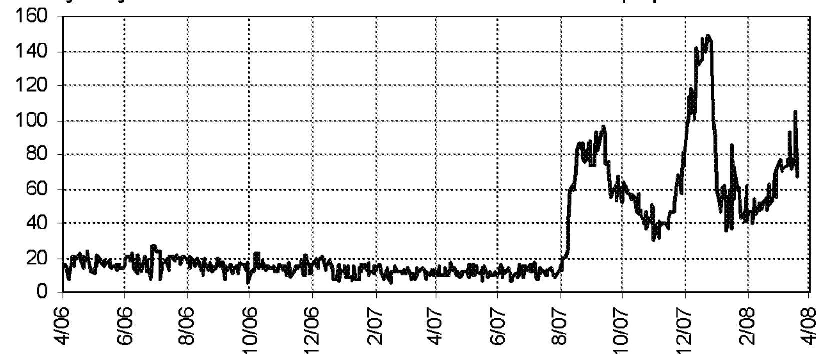
Asset-backed commercial paper (ABCP) dries up

U.S. commercial paper amount outstanding
$ Billions



Investors seek safety, increasing some CP spreads sharply

Discount rate spread
Thirty day A2/P2 less AA nonfinancial commercial paper



Off-balance sheet vehicles returned to bank balance sheets

- **HSBC**: Moves $45bn in SIV assets onto balance sheet (Nov 2007)
- **Citibank**: Moves $58bn in SIV assets onto balance sheet (Dec 2007)
- **Credit Suisse**: Moves $8bn in SIV and other off-balance sheet securities on balance sheet (Mar 2008)

Source: Federal Reserve, literature search

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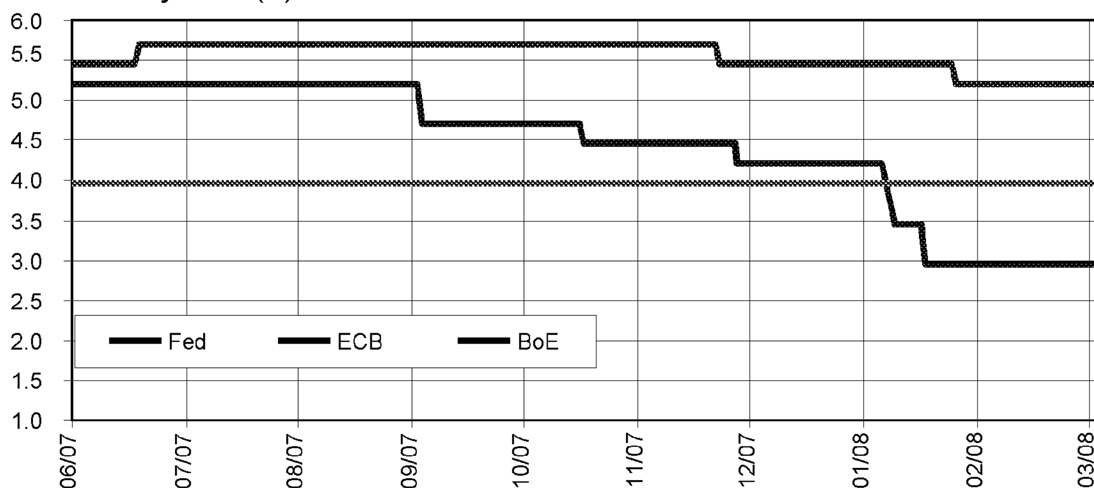
The Fed has gone to great lengths to support the U.S. economy overall and the liquidity of its financial system

Central Bank Policy Rates (%)



- The US Fed has taken a **more aggressive approach** than its British and European counterparts in dealing with the credit and liquidity environment
- Fed reduced its policy rate **225 basis points** since summer 2007

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The Fed had also pursued a variety of policies to provide additional liquidity to financial institutions

Prior to Bear Stearns collapse

- Dec 12, 2007:
  - Fed creates **Term Auction Facility (TAF)**, a mechanism for auctioning $20bn in funds to depository institutions
  - Reacting to concern about liquidity clearing the "year-end squeeze" Fed extends $8bn in short-term loans until early `08
- March 7:
  - TAF auctions for 3/10 and 3/28 each increased to $50bn
  - Fed begins series of **term repurchase transactions** up to $100bn for primary dealers, who can use any conventional market collateral
- March 11:
  - Fed creates **Term Securities Lending Facility (TSLF)** to lend up to $200bn in Treasury bonds to primary dealers for 28 days in exchange for bonds of AAA-rated private mortgage-backed bonds*; first TSLF auction set for 3/27

During and following Bear Stearns collapse

- March 14:
  - Fed votes to **lend Bear money through JP Morgan** for 28 days
  - Through March 16, joins with Treasury to encourage completion of **JP Morgan** / Bear deal over weekend
- March 16:
  - **Primary Dealer Credit Facility (PDCF)** authorized for New York Fed to be available for business to lend to primary dealers using a broad range of investment-grade debt securities; facility drew an average of $13.4 bn in daily borrowings over its first three days
  - Fed provides $30bn in non-recourse loans secured by Bear securities
- March 20:
  - Fed announces additional $75bn of Treasury securities available under TSLF to investment banks and expansion of allowable collateral, e.g., commercial mortgage securities
  - Investment bank borrowings from Fed reached $28.8bn

*Not on review for downgrade as collateral (reserving the right to demand other assets if pledged collateral turns bad)

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Bear's rapid drop from $17bn to $2bn in liquidity holdings may have been driven by three groups of customers and counterparties

Three sources of liquidity pressure were discussed on Friday, 3/14 conference call

Q: "Did the liquidity crunch arise mostly with **counterparties** like in the **repo financing** area, withdrawal of **prime brokerage free credit balances** or some combination thereof?"

Guy Moszkowski- Merrill Lynch

A: "We experienced pretty broad cash outflows from a number of different sources

- certainly the **repo area,**
- continued cash outflows amongst our **prime brokerage clients,** as well as
- mark-to-market calls on **open derivative contracts.**"

Sam Molinaro- Bear Stearns, CFO, COO

Market intelligence on those three sources of liquidity pressure

- **Repo counterparties**
  - Concerned about **volatility in the value of Bear's collateral** and **Bear's creditworthiness as a counterparty**
  - At FYE 2007, Bear's gross repo financing was $102bn and net repo financing was $74bn
- **Prime brokerage customers**
  - Concerned about the **continued availability of Bear credit**
  - **Example: Renaissance Technologies** moved "several billion dollars of assets [out of Bear] and into the hands of Wall Street rivals" (March 15)
- **Derivatives counterparties**
  - Concerned about **counterparty risk on in-the-money derivative contracts** and **potential future exposures**
  - **Example:** For long-term derivatives transactions, "[s]ome clients of rivals like **Goldman Sachs, Morgan Stanley, Credit Suisse and Deutsche Bank** have asked those firms to be counterparties to Bear in completed transactions." (March 14)

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Source: WSJ 3/18/08 (reported drop from $17bn capital base to $2bn in cash); over same period SEC Chair Chris Cox cited a drop in liquidity from $18bn to $2bn (Bloomberg March 20)

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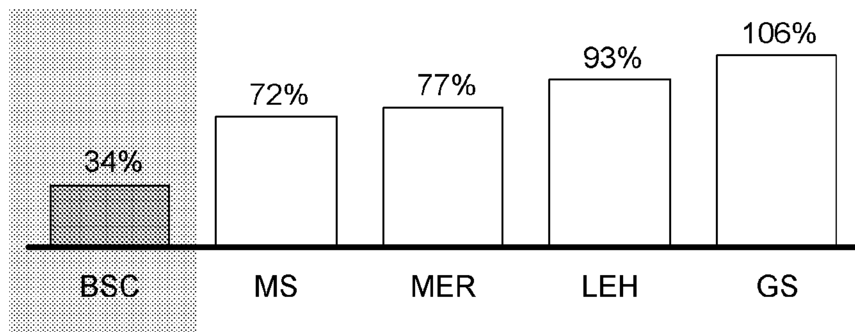
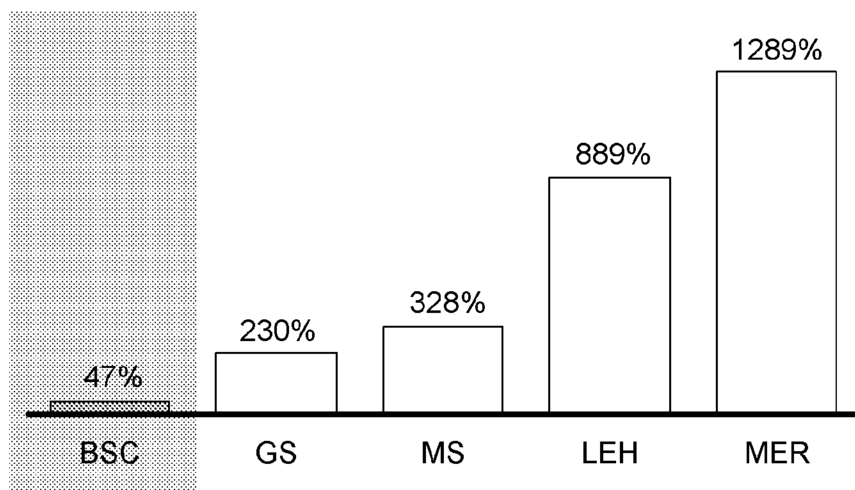
Bear was unable to repay its outstanding repo lines with available resources

Total liquidity as % of gross repo financing at FYE`07



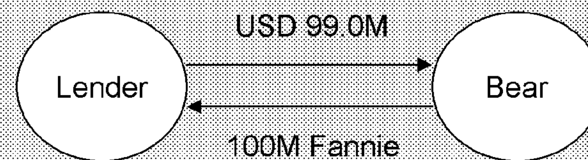
Total liquidity as % of net repo financing at FYE`07



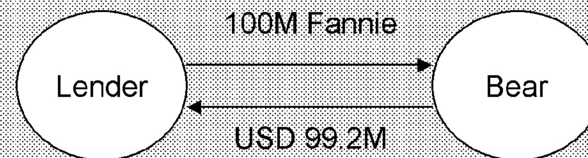
Repo transaction in detail

- A Repo borrowing is a form of short-term borrowing on a secured basis against a securities inventory
- Example
  - A lender has $99M to invest for 14 days from 1 Nov 2007 to 15 Nov 2007. Bear can provide the Fannie 11/15/17 as collateral and quotes a Repo rate of 4.5%; hence the lender will earn Repo interest of $0.2M.
  - Flow

1 Nov 2007



15 Nov 2007



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Source: Analyst reports

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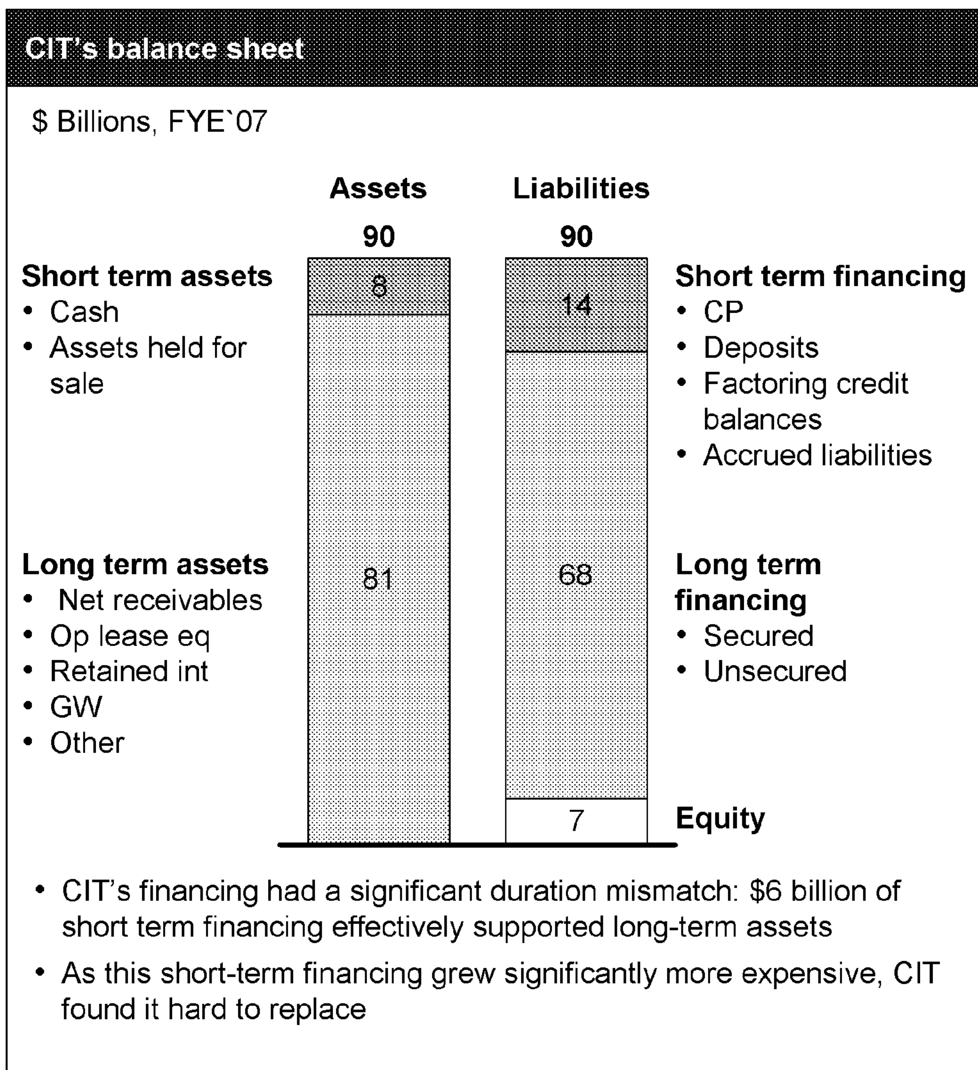
CIT announced a $7.3 billion drawdown on its backup line of credit

CIT's balance sheet



- CIT's financing had a significant duration mismatch: $6 billion of short term financing effectively supported long-term assets
- As this short-term financing grew significantly more expensive, CIT found it hard to replace

Key events/public releases of CIT

- CIT is a non-bank commercial financing company; it relies on ongoing borrowings to finance its lending
- Due to credit market turmoil, it was forced to use more capital-intensive short term financing sources – e.g., its use of secured borrowing rose from 5% as of FYE `06 to 30% a year later
- Recognizing this "deteriorating funding profile", on 3/18 and 3/19 Moody's and S&P downgrade CIT's short term credit ratings (e.g. S&P to "A-/A-2" from "A/A-1"); long-term ratings put on review by Moodys and Fitch and cut by S&P (to A- from A)
- On 3/20 CIT was forced to draw its entire $7.3bn of emergency credit lines
  - CIT must have enough cash to cover $9.7bn of debt that matures in 2008, $4.1bn of which comes due in May
  - *"We recognize that, given the current market environment, we need to run a smaller company." – Jeffrey Peek, CIT's CEO*
- CIT claims that credit line will cover all funding needs for 2008

Source: SEC filing, literature search

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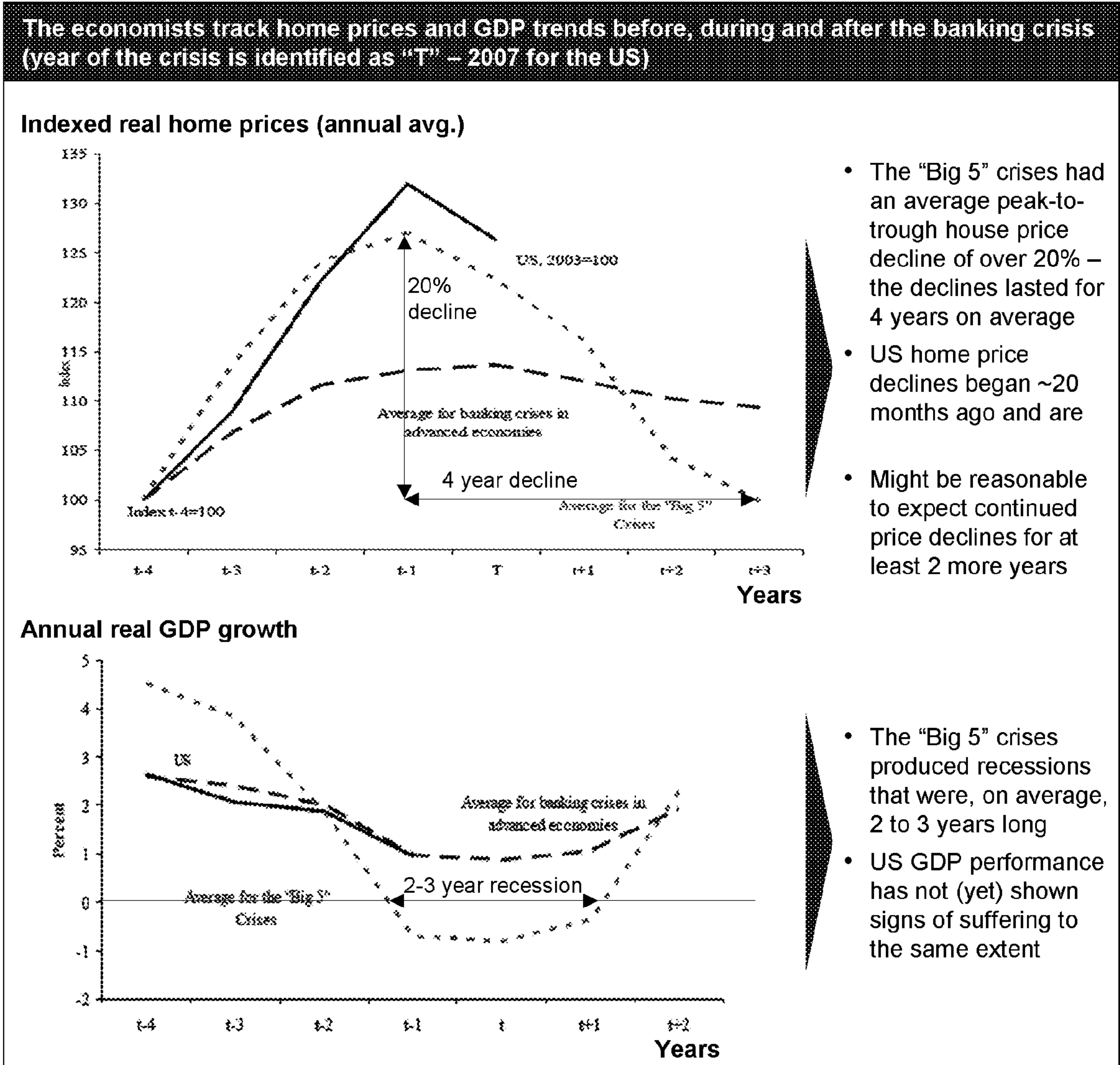
Previous international banking crises suggest how long the current environment may persist

Economists identify these "Big 5" banking crises since WWII (out of 18 total)

	Description
Spain (1977)	• The first energy crisis affected Spain's banking system, leading to 52% of 110 banks into serious financial problems
Norway (1987)	• Commodity-shock driven recession led to loan losses and then insolvency in banks; three largest banks nationalized
Finland (1991)	• Recession preceded by financial market liberalization and the collapse of exports to the former Soviet Union led to a severe depression; the Finnish government spent over 10 billion Euros over the crisis period to support Finnish banks
Sweden (1991)	• A restructuring of the tax system caused financial bubble that formed during 1980s to burst; the central bank was unsuccessful to defend the currency's fixed exchange rate even with the interest of 500%
Japan (1992)	• Non-disclosure and a lack of transparency resulted in lowering rating companies' evaluations of Japanese banks; thirteen Japanese financial institutions went effectively bankrupt during 1995



Source: "Is the 2007 U.S. Sub-Prime Financial Crisis So Different? An International Historical Comparison", C. Reinhart & K. Rogoff, Feb 2008

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TODAY'S DISCUSSION

1. An Environment of credit and liquidity growth

2. The US mortgage market as the epicenter of the crisis

3. The concern over contagion

4. Implications and outlook
   - Winners and losers
   - Implications for select financial areas

5. Lessons for Professional Risk Managers

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RISK MANAGEMENT LESSONS LEARNED FROM CURRENT/ RECENT CRISIS (1/2)

Avoiding risk disasters	(1) **Significant risk surprises are generally the result of a failure of multiple basic disciplines of good risk management** (e.g., front line accountability; transparency; ineffective partnership risk/businesses). **Surprisingly, this occurs even at leading institutions** (e.g., magnitude of recent losses at UBS, Merrill, Bear, BMO) (2) ***"Frog in boiling water"* – companies do not pay sufficient attention to gradually arising problems** (e.g., banks hoped rising housing market would let them "grow out" of problems, perhaps falsely relying on pricing patterns from recent past) (3) **Existing risk management systems have proven insufficient in providing an aggregate view of exposure to risk factors** (e.g., mortgage spreads) **across different businesses**; contributing factors include: • **Not enough probing questions** ("Why and how did we make so much money?"; "What scenarios would hurt us?", "Do all our managers possess the habits of an effective 'curious manager'?) • **Silo mentality** (e.g., impact of widening mortgage spreads not systematically analyzed across the organization) • **Systems limitations** ("I know what the analysis are we need – but we can't do them done without massive manual labour")
Getting governance right	(4) **Risk Management organizations are often large but underinvested in top talent** (e.g., not enough analytical talent that also has a strong business background) (5) The pendulum between central and decentral risk organizations has swung back and forth; on balance, **in diversified institutions, strong BU-level Risk management in conjunction with strong but lean central oversight appears to work best** (e.g., independent BU CROs who serve as business leaders' risk conciglieri and has an aggregate view on all risks) (6) **Insufficient (or unproductive) risk dialogue at the Board level** has caused frustration in many Board rooms ("Hard to even know what questions to ask", "We're not seeing what management doesn't proactively bring forward")
Ensuring risk transparency	(7) **Risk metrics are a very important and indispensable tool, but at the same time, they are often a fallacy** • Management relies on a few numbers which are the result of a multitude of assumptions that are not well understood (e.g., metrics may not adequately account for liquidity risk; "if we assume a Weibull distribution, capital is ....") • Risk tools (e.g., VaR models, stress tests) have proven largely inadequate to assess the impact of market dislocations, failing to account for "fat tails" or shifting correlations (e.g., VaR was $20MM but loss several hundred millions) (8) **(In particular universal banks) with complex capital market businesses tend to not spend enough time on truly understanding the risk and return drivers of these businesses**. This leads to excessive growth of these business in good times and larger than expected volatility or significant losses in bad times (e.g., BMO commodities; Merrill Lynch's exposure to 'highly rated ABS'; HSBC's repatriation of off-balance sheet items)

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RISK MANAGEMENT LESSONS LEARNED FROM CURRENT/ RECENT CRISIS (2/2)

Ensuring risk transparency	(9) **Risk reports are often rich in data and poor in synthesis and actionable insight** (e.g., businesses manage partially 'by intuition', higher levels of the organization never fully comprehend risk-return profile; Board spending more time reviewing single transactions vs. focusing on emerging risks, portfolio issues) (10) **Most banks have not sufficiently optimized their data infrastructure**, leading to costly fixes (e.g., Basel II) and limiting the level of insight that smart analytics could add to portfolio analysis and risk reporting (e.g., no single person accountable for developing and maintaining a risk systems / data infrastructure)
Establishing a robust risk culture	(11) **In best-in-class organizations, businesses are the best risk managers ("first line of defence") and Risk Management is a key enabler to profitable growth**; problems arise when Risk is more of a "cop" – a goalie trying to catch the bad pucks, skating behind the quickly evolving businesses, and when businesses take most risks Risk Management would agree to ("Risk is incented to minimize, not optimize risk"; "traders rely on risk management to control and manage risks, and feel they can do whatever is within limits") (12) **More attention to the "soft aspects of risk management" is needed** – models, policies and controls tend to follow (not lead) quickly evolving businesses (in particular in capital markets businesses), making a cohesive risk culture a much more powerful defense and offense (e.g., Goldman)
Credit risk – adapting to changing environment	(13) **Approaches to distributing credit risk have proven insufficient in a world of limited liquidity**; leaders are rethinking portfolio management (e.g., greater power to mark-to-market loans at origination) and innovation (e.g., develop new distribution channels beyond CDOs such as private banking) (14) **Loss mitigation strategies have often failed to recognize macro risks** (e.g., focus on average LTVs vs. distribution of LTVs under stress)
Market risk– managing convergence	(15) **Prevalent approaches to managing the risks in complex fixed income products** (e.g., securitizations; structured products) **have failed to fully integrate credit and market risks** (e.g., limits, approval process), leading to • Undue risk taking in some cases (e.g., credit and market risks are not jointly considered when assessing a transaction; impact of correlation scenarios on portfolio) • Opportunities left untapped in other cases (e.g., market risk treated as credit risk with more cumbersome approval processes)

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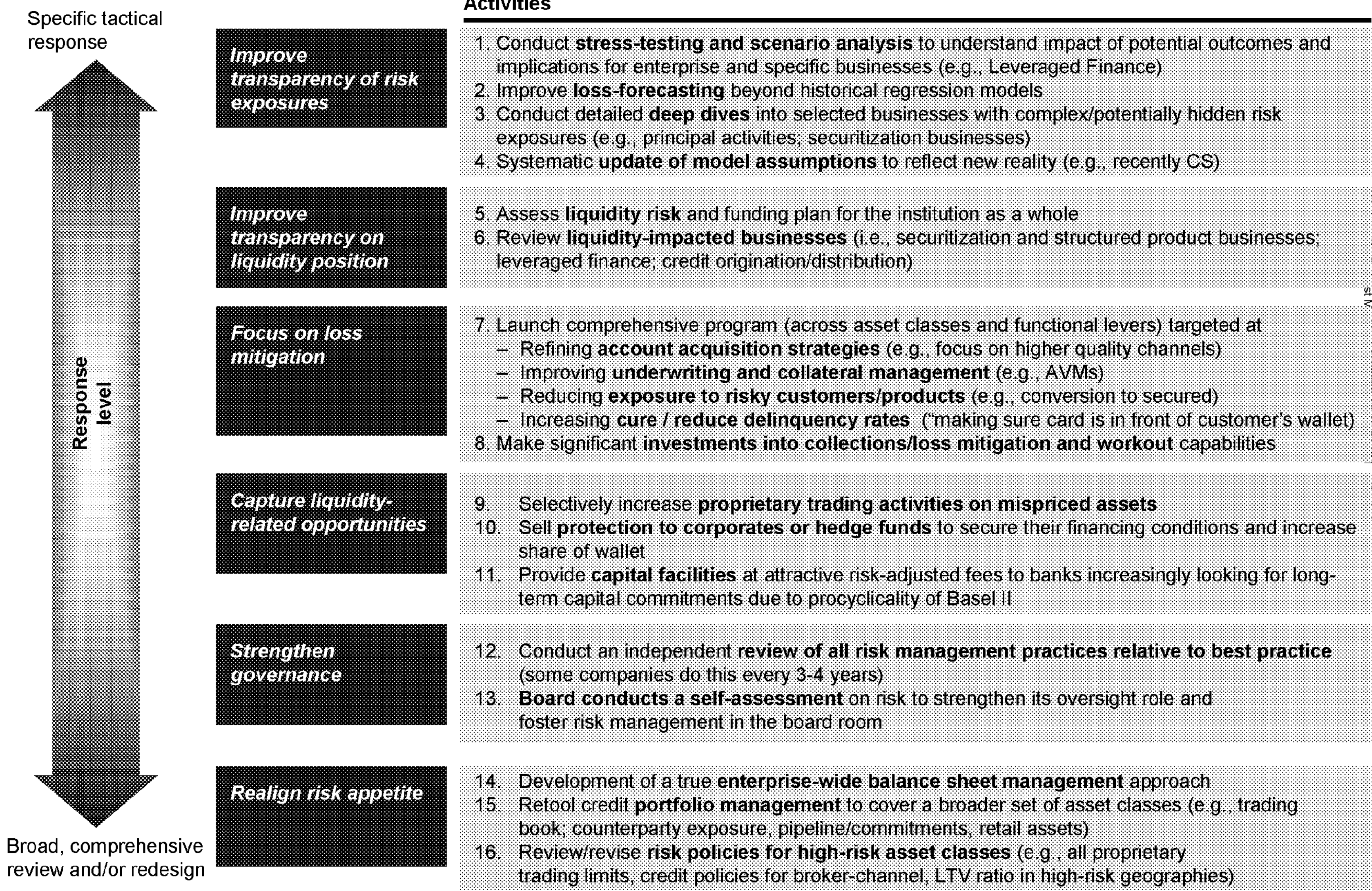
THE CRISIS IS PROMPTING BANKS TO REVISE AND IMPROVE RISK MANAGEMENT PRACTICES



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