

Behavioral Aspects of Individual and Group Decision Making and Risk Management in Recent Financial Crises

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“Investing is a very humbling activity. You constantly realize how human you are.”

Don Phillips, Managing Director – Morningstar, WSJ 12/5/2005

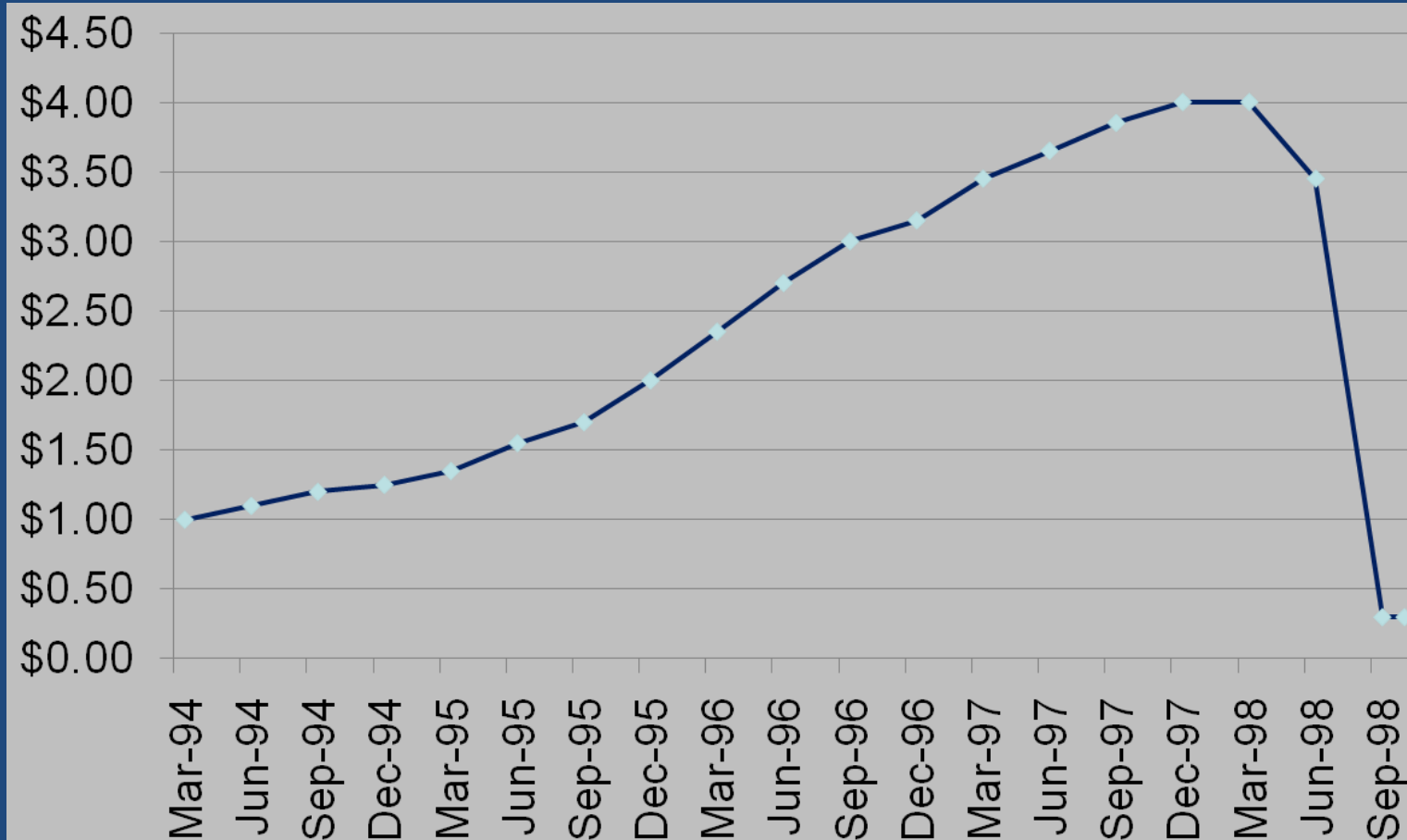
Examples of Major Losses By The Most Well-Respected Risk Managers in the World

LTCM in 1998

Bear Stearns, Lehman, FNMA, Freddie Mac, AIG, Citigroup, BofA, Wachovia, Merrill in 2008/2009

and JPMorgan in 2012

LTCM Growth Per \$1 Invested March 1994-September 1998



Source: *When Genius Failed*, Roger Lowenstein, 2000

Stock Price Falls of Big 5 Investment Banks in the Financial Panic of 2008/2009

	Price 12/31/20 06	2008 Low Price	2009 Low Price	Feb 2010	June 30 2012
Bear Stearns	\$162.78	\$ 4.81	Sold to JPM for \$10		
Goldman Sachs	\$199.35	\$ 78.20	\$47.41	\$156.70	\$95.86
Lehman Brothers	\$ 78.12	\$ 0.05	Bankrupt		
Merrill Lynch	\$ 93.10	\$ 13.10	Sold to BAC (For \$27?)		
Morgan Stanley	\$ 67.20	\$ 9.58	\$ 6.71	\$ 27.15	\$14.59

Stock Price Falls of Commercial Banks in the Financial Panic of 2008/2009

	12/31/ 2006	2008 Low	2009 Low	Feb 2010	June 30 2012
Bank of America	\$53.39	\$18.52	\$ 2.53	\$15.94	\$8.18
Citigroup	\$55.70	\$11.52	\$ 0.97	\$ 3.35	(\$27.41/10) = \$2.74
JP Morgan	\$48.30	\$31.02	\$14.96	\$39.88	\$35.73
National City	\$36.56	\$ 1.36	Sold to PNC nr 0		
Wachovia	\$56.95	\$ 1.84	Sold to WFC nr 0		
Wells Fargo	\$35.56	\$20.51	\$ 7.80	\$27.29	\$33.44

Market crash shakes world

How the world's markets fell this week...

Tokyo
▼ 24.3%

Frankfurt
▼ 21.6%

London
▼ 21.1%

New York
▼ 18%

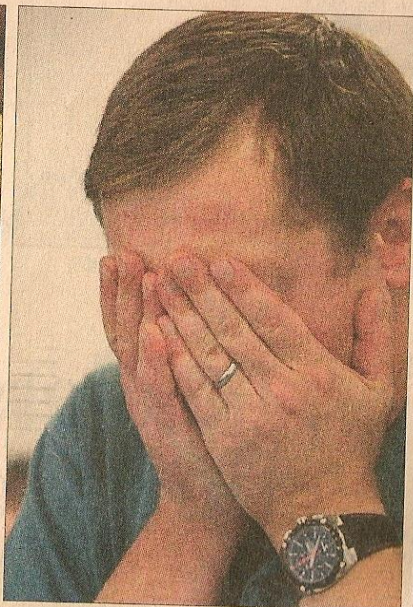
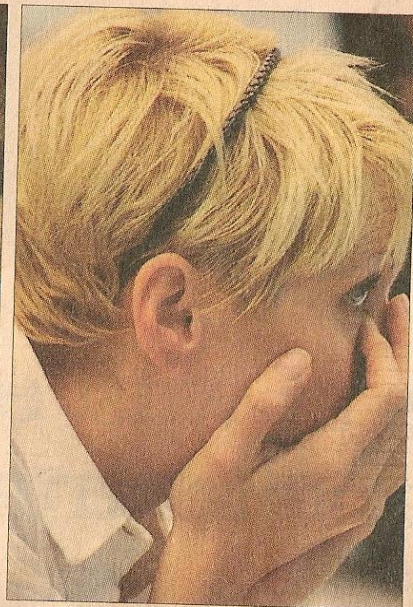
The day in summary

More Lehman pain
The new losses looming thanks to the bankrupt bank
Markets, Pages 16-17

The crash in England
How to tell your CD from your CFD and the Libor OIS spread
www.ft.com/crisis

The new gold rush
As markets crash, demand for the precious metal soars
www.ft.com/markets

The new panic
It's not about faith in banks, but faith in governments to save them



US stocks suffer worst week since Depression

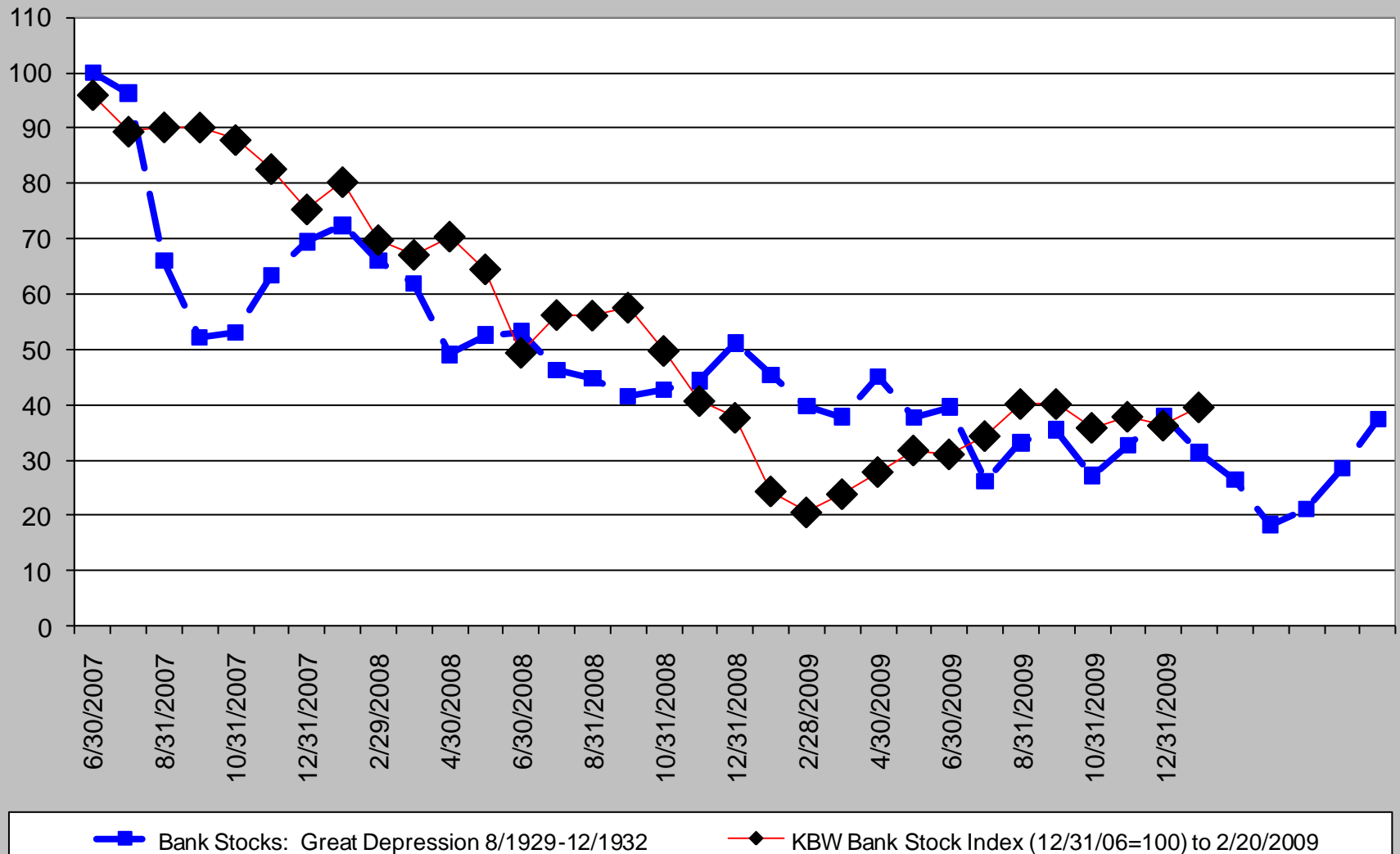
7.7 per cent fall at the opening in New York, US stock indices staged a late rally and closed

"The events we've seen this week represent a once-in-a-generation increase in risk aversion

and establish strong depositor protection. The precise form of these commitments would differ

including the idea of creating a central clearing house for inter-bank loans that could eliminate

Financial Panic of 2008/2009: Bank Stocks Fell 80%, as Much As In the Great Depression End of Month, June 2007- Jan 2010 vs. Aug 1929- Aug1933



How can major institutions with such smart people make such disastrous decisions?

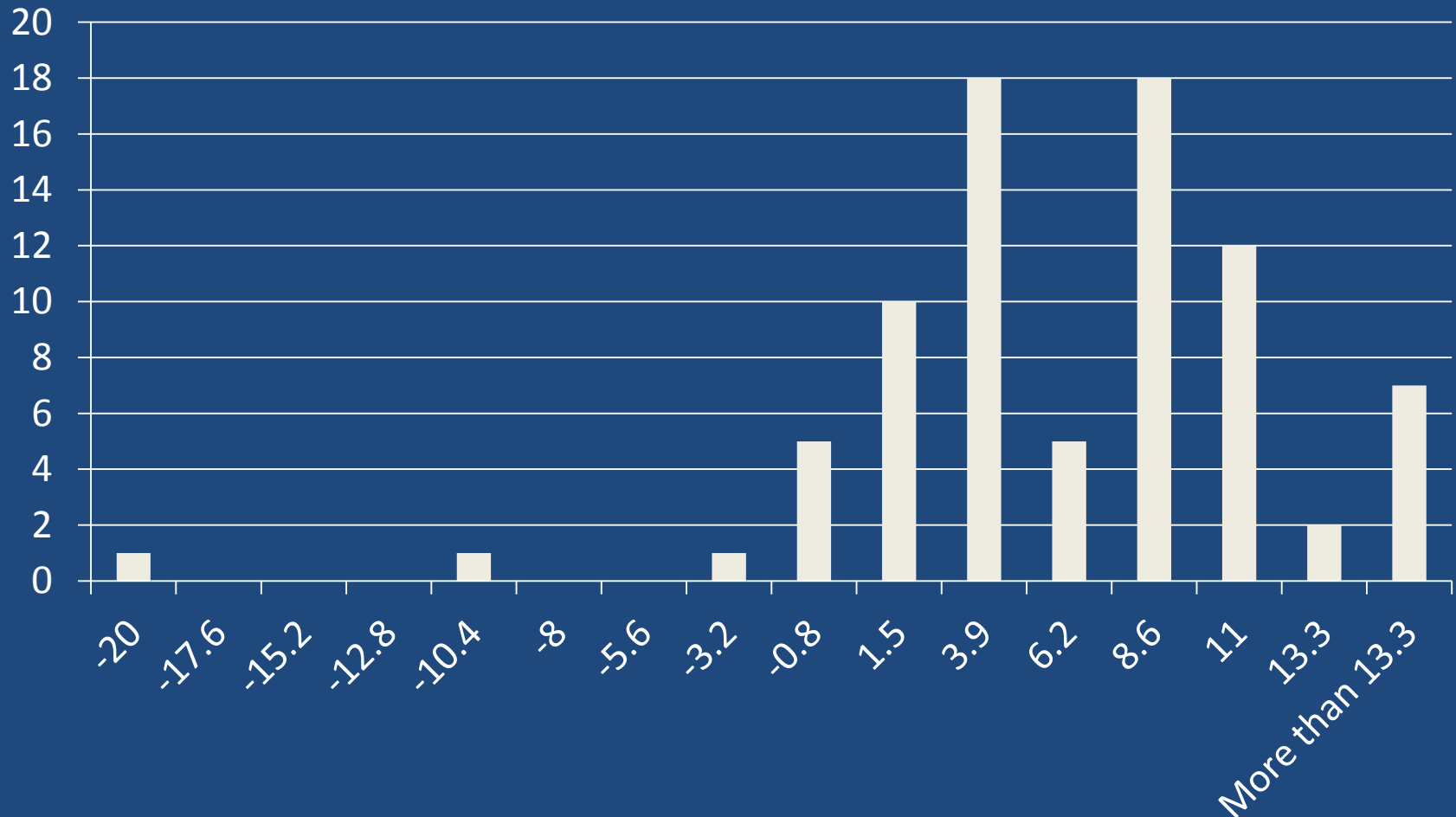
Maybe it was just “The Storm of the Century”

“Six Sigma” Drop In Real Estate Prices and Loan Delinquencies Soar:

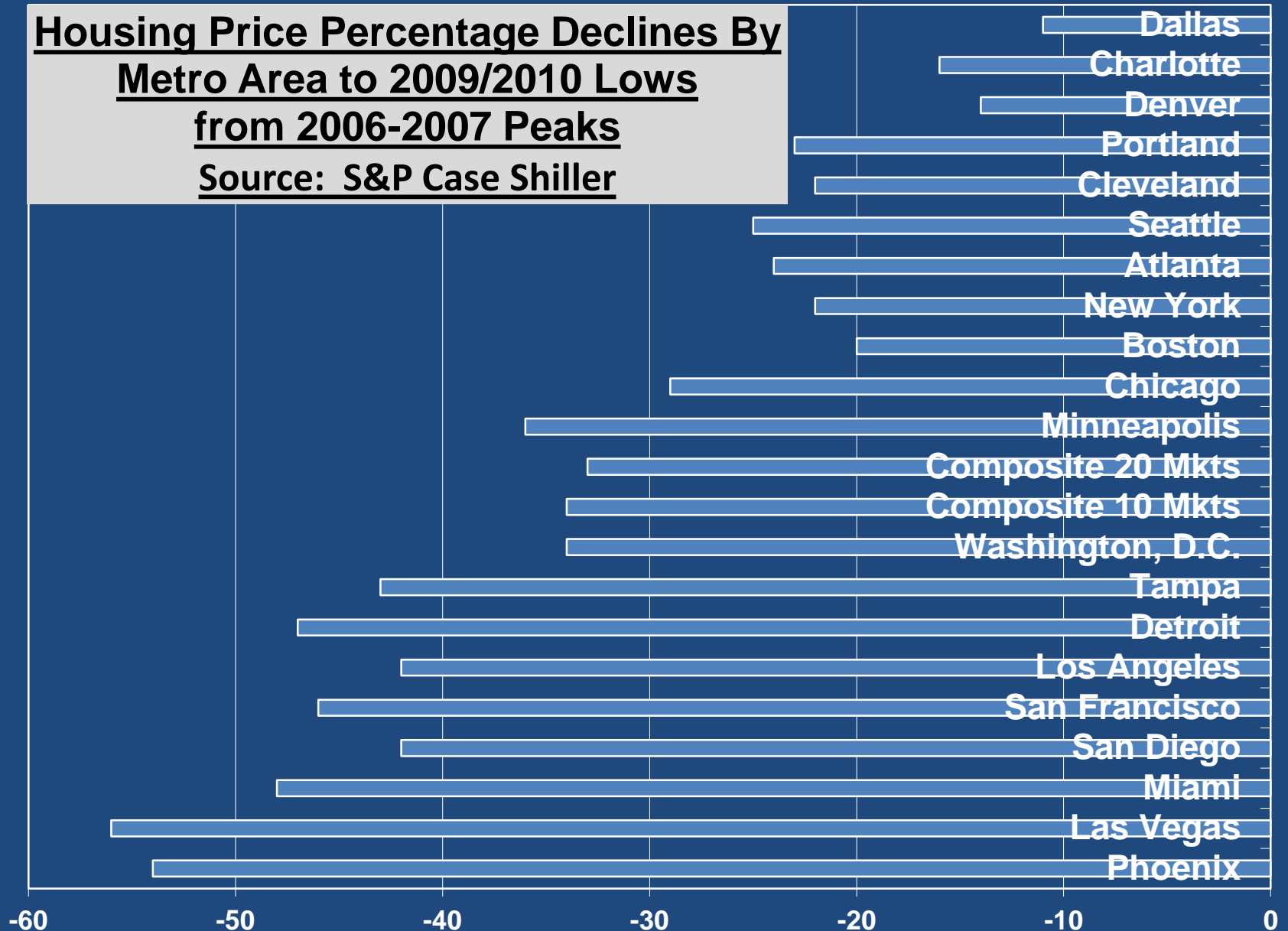
- Real estate prices have dropped by amounts that were truly unmeasured previously. Normal standard deviation of annual real estate price changes = 3.2%.
- Drop of 10% was 3 sigma, followed by a truly 6-sigma drop of 20%. Worse in some areas. Almost nobody saw drops of this magnitude nationally.

Frequency of Housing Price 4Q % Changes

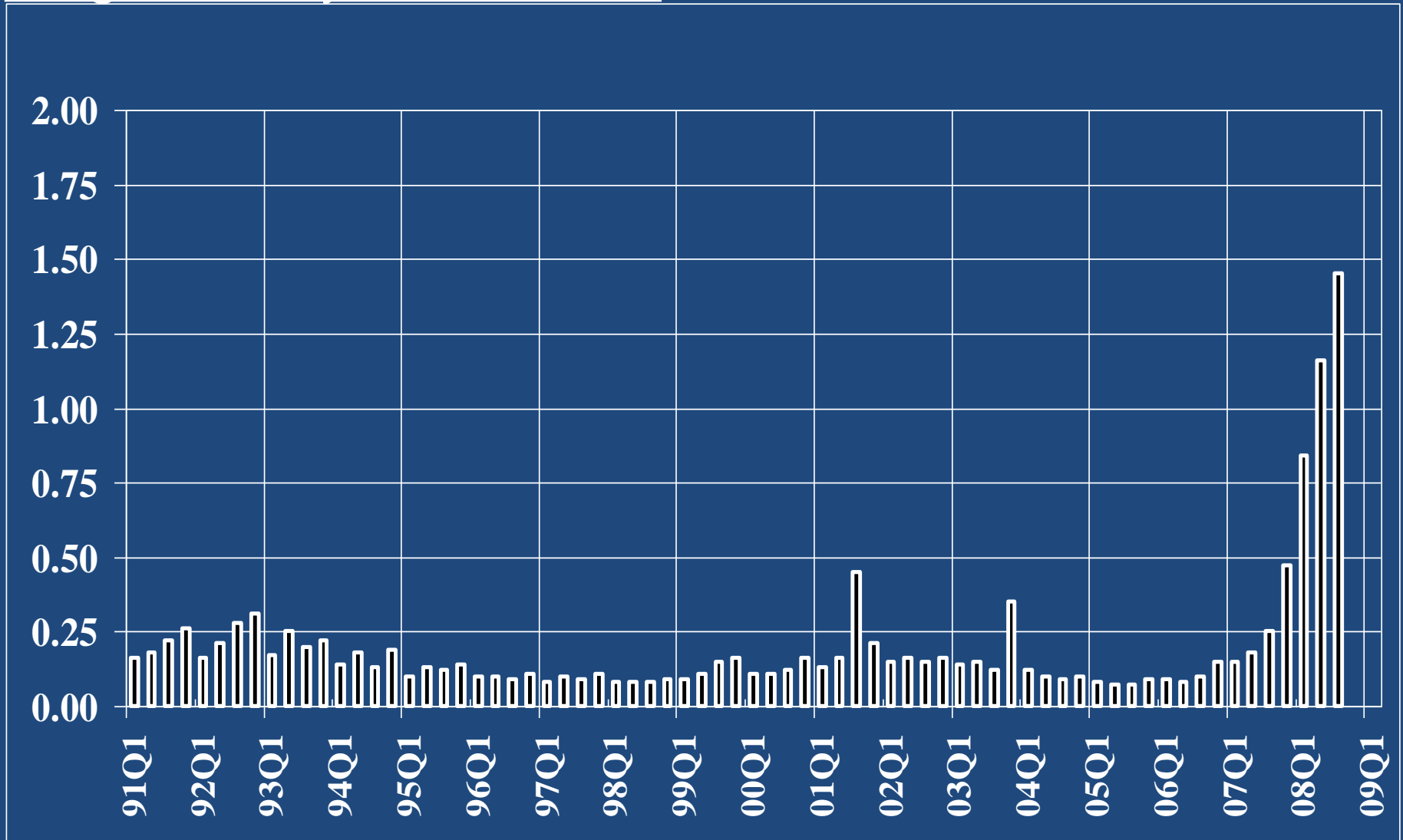
Case Shiller 1987-2009: 6 Sigma Event.



Housing Price Percentage Declines By
Metro Area to 2009/2010 Lows
from 2006-2007 Peaks
Source: S&P Case Shiller



Banks' Net Chargeoffs Hit Historic High on Loans on Single Family Real Estate (Annualized Pct, Quarters 1991-2008 Q3)



... But maybe we contributed to the fall with all-too-human errors in decision making.

Insights from Research on Behavioral Decision Making

JPMorgan's \$2+ Billion Loss in its London Chief Investment Office:

*Headline in USA Today, June 14, 2012:
“Dimon blames complacency for loss.”*

CEO Jamie Dimon's June 13, 2012 Testimony to Congress:

“The bank's chief investment office ‘had done so well for so long that it was a little bit of complacency about what was taking place there and maybe overconfidence.’ ”

(sounds eerily like LTCM 14 years earlier)

Neither Bad nor Dumb – Just Human: Behavioral Aspects of Financial Decision Making



“Because we believe that we are smarter than the average bear, we begin to believe that we are not bears.”

John W. Payne

Review of Key Research Results in Behavioral Aspects of Decision Making

1. Confirmation bias.
2. Overconfidence in knowledge
3. Overconfidence in range estimates
4. Confidence usually grows more than accuracy with more information.
5. Planning Fallacy
6. Prospect theory
7. Disposition effect
8. Regret avoidance
9. Loss aversion
10. Framing and mental accounting
11. Memory bias: overweighting recent information.

1. Confirmation Bias

*With an example from the Financial
Panic of 2008/2009*

Confirmation Bias:

Perhaps the most common thinking trap

- People tend to search out information that will tend to confirm previously held beliefs.
- In addition, people tend to misinterpret ambiguous new information as supporting previously held beliefs.
- The confirmation bias contributes to other biases like overconfidence .
- “The human understanding when it has once adopted an opinion draws all things else to support and agree with it.” (Francis Bacon).

Evidence for Confirmation Search

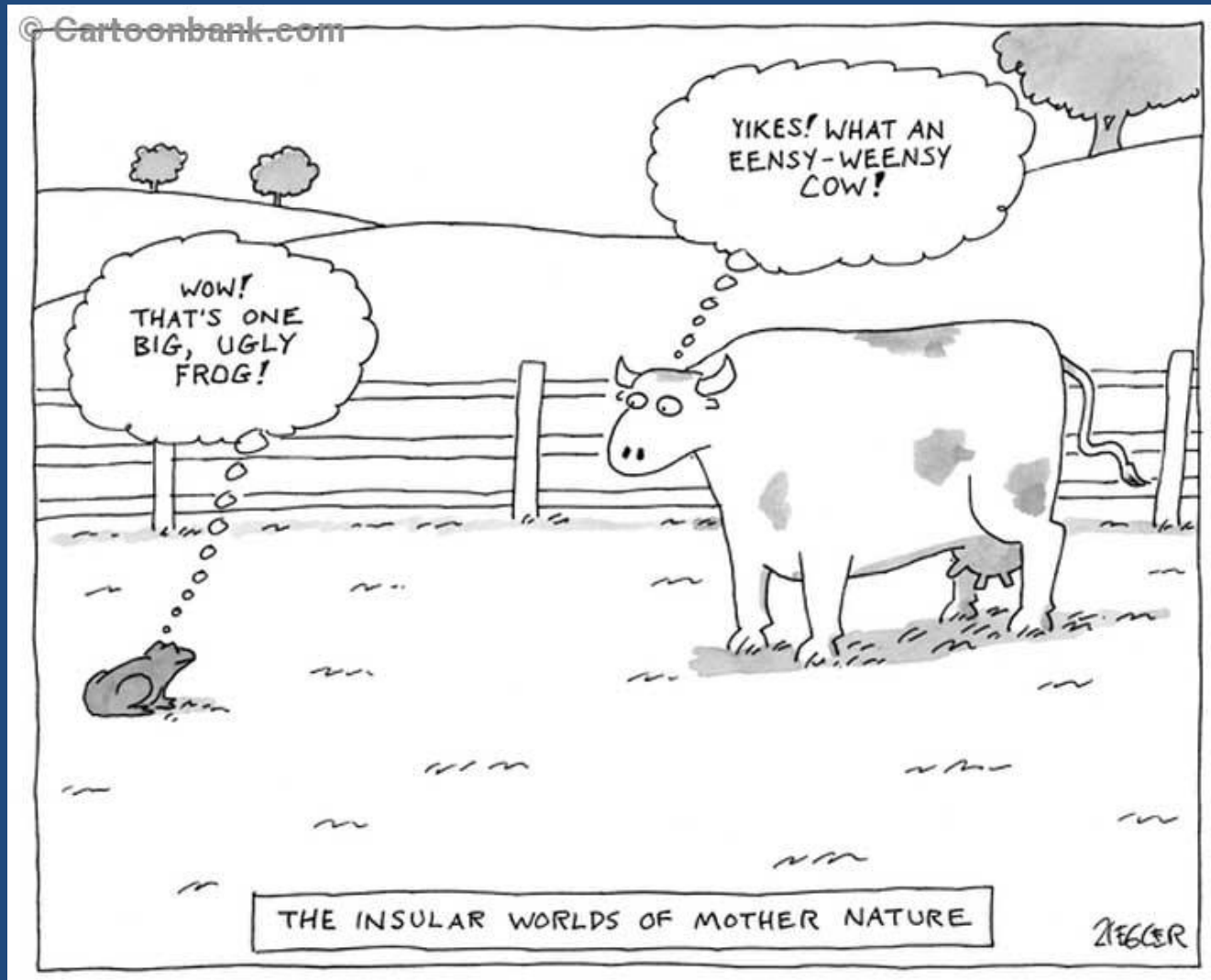
- The search for confirming Information? - Schulz-Hardt et al., (2000)
- Results:

Mean # Items of Information	Supporting Information	Conflicting Information	Confirmation Bias
Individual	2.33	1.23	1.07
Group	2.65	1.11	1.54*

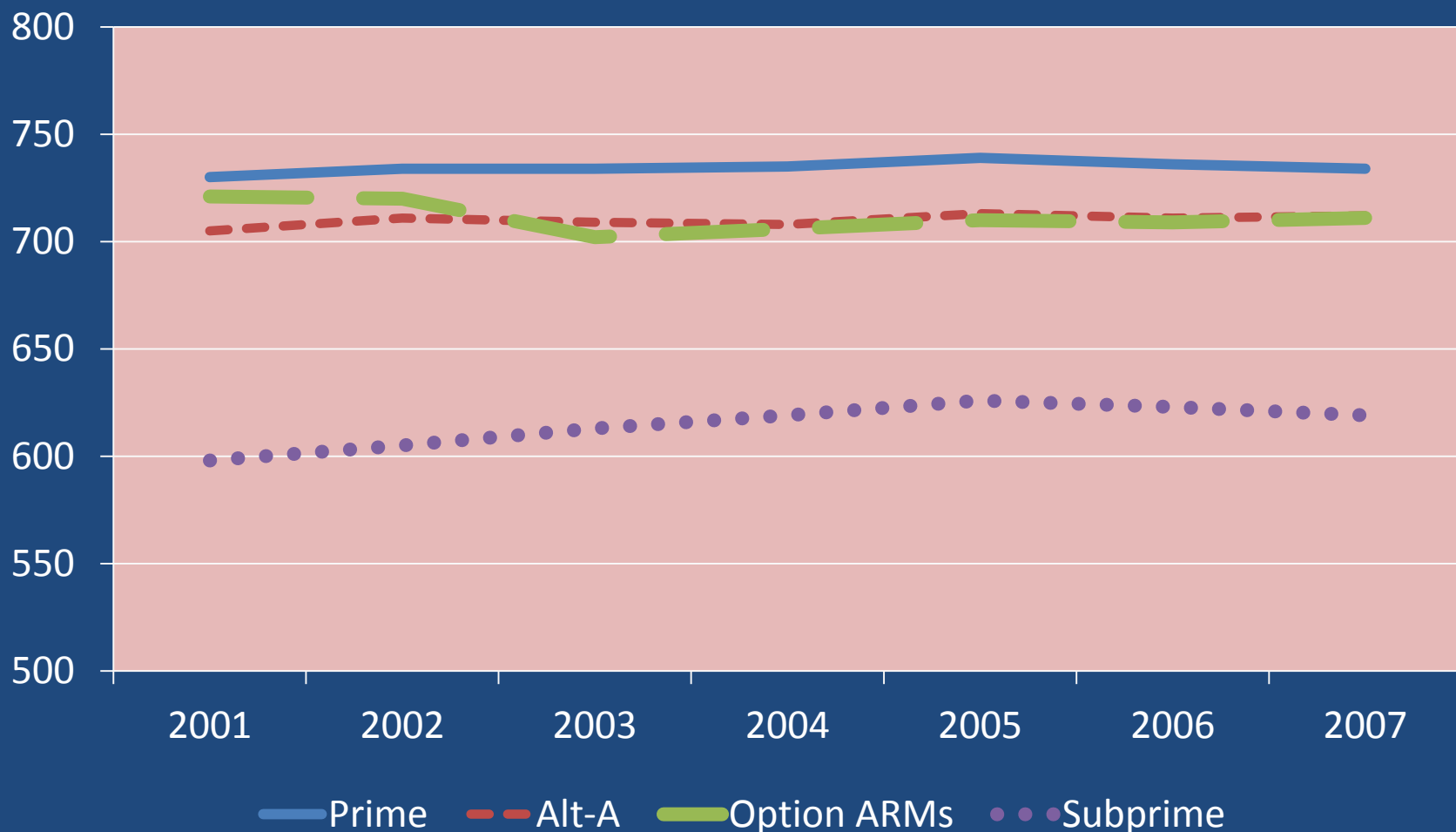
*The larger the majority in favor of the initially preferred option the stronger the effect.

**The more confident a group is in the correctness of their judgment, the stronger the effect.

We see what we expect to see



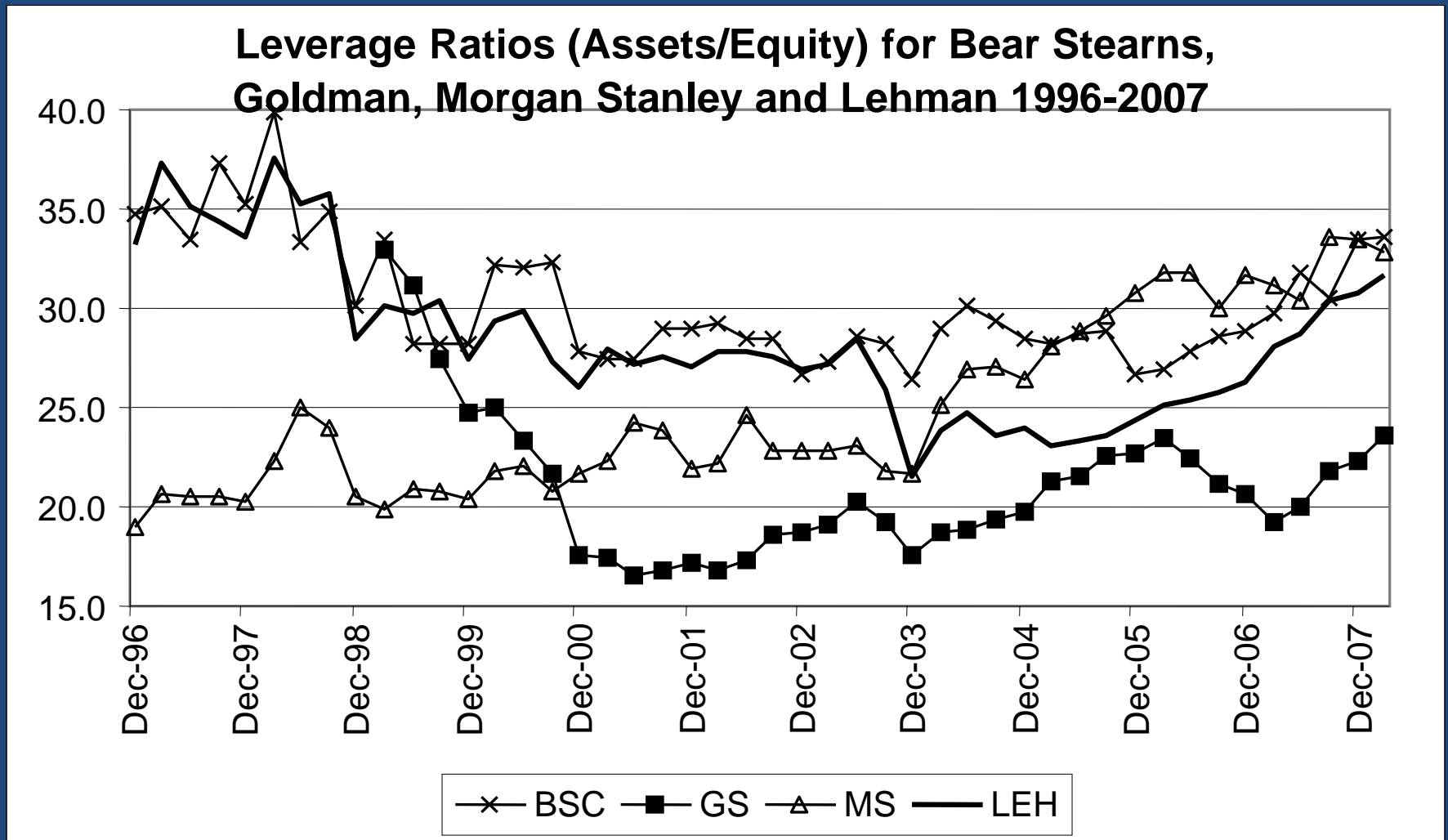
In Buying Asset Backed Securities in Late 2007, FICO Scores
Were Stable, Showing No Sign of Credit Deterioration.
Confirmatory for Buyers at “wide spreads” late 2007



Source: Laurie Goodman, Amherst Securities

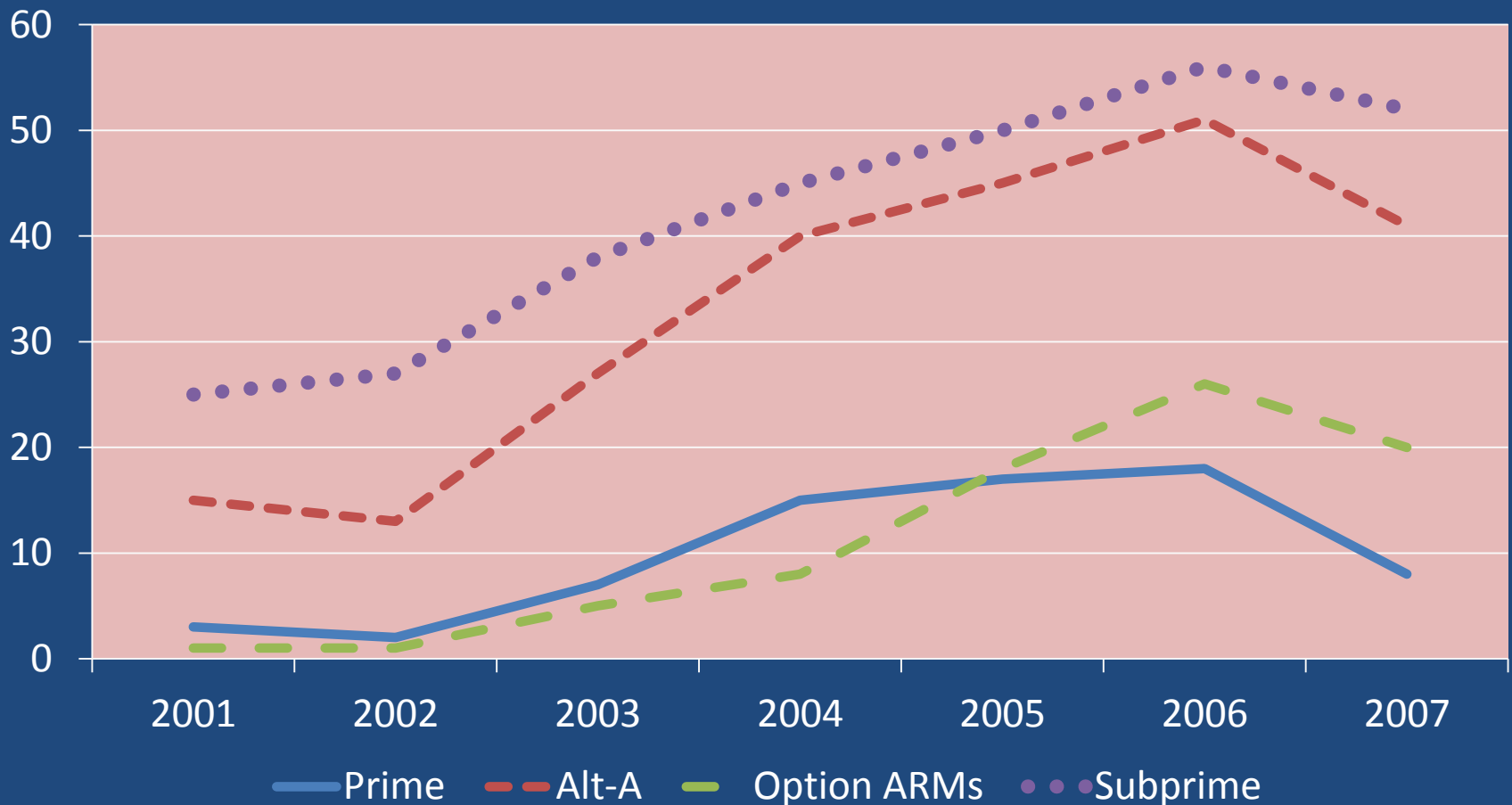
Investment Banks and LTCM levered up in 1998 as prices fell and spreads widened, then did the same in 2007.

“Buy low, sell high!”



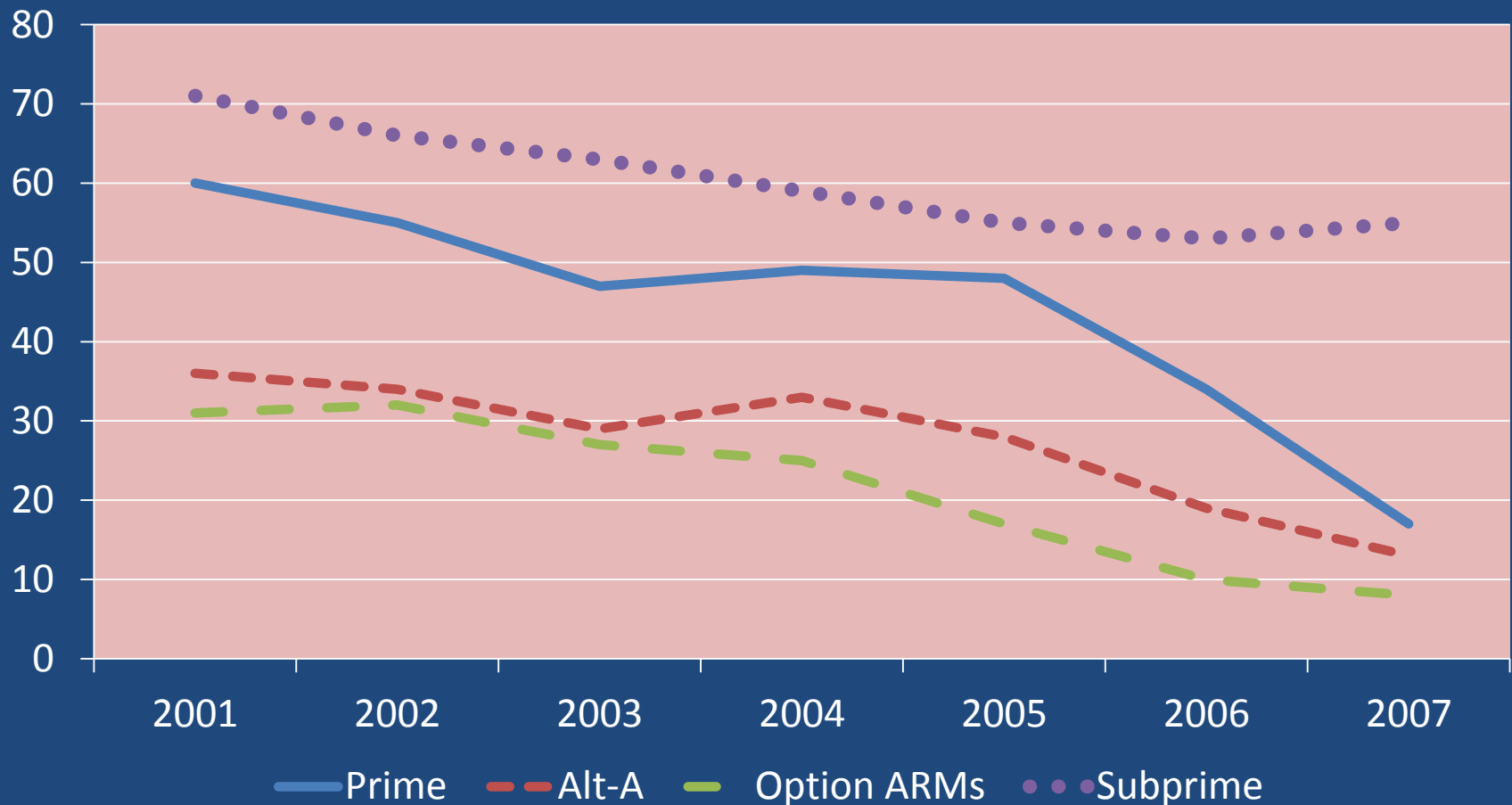
But looking further at other statistics, deterioration in credit quality standards was evident:

Percent Loans with Loan/Value >90% Increased



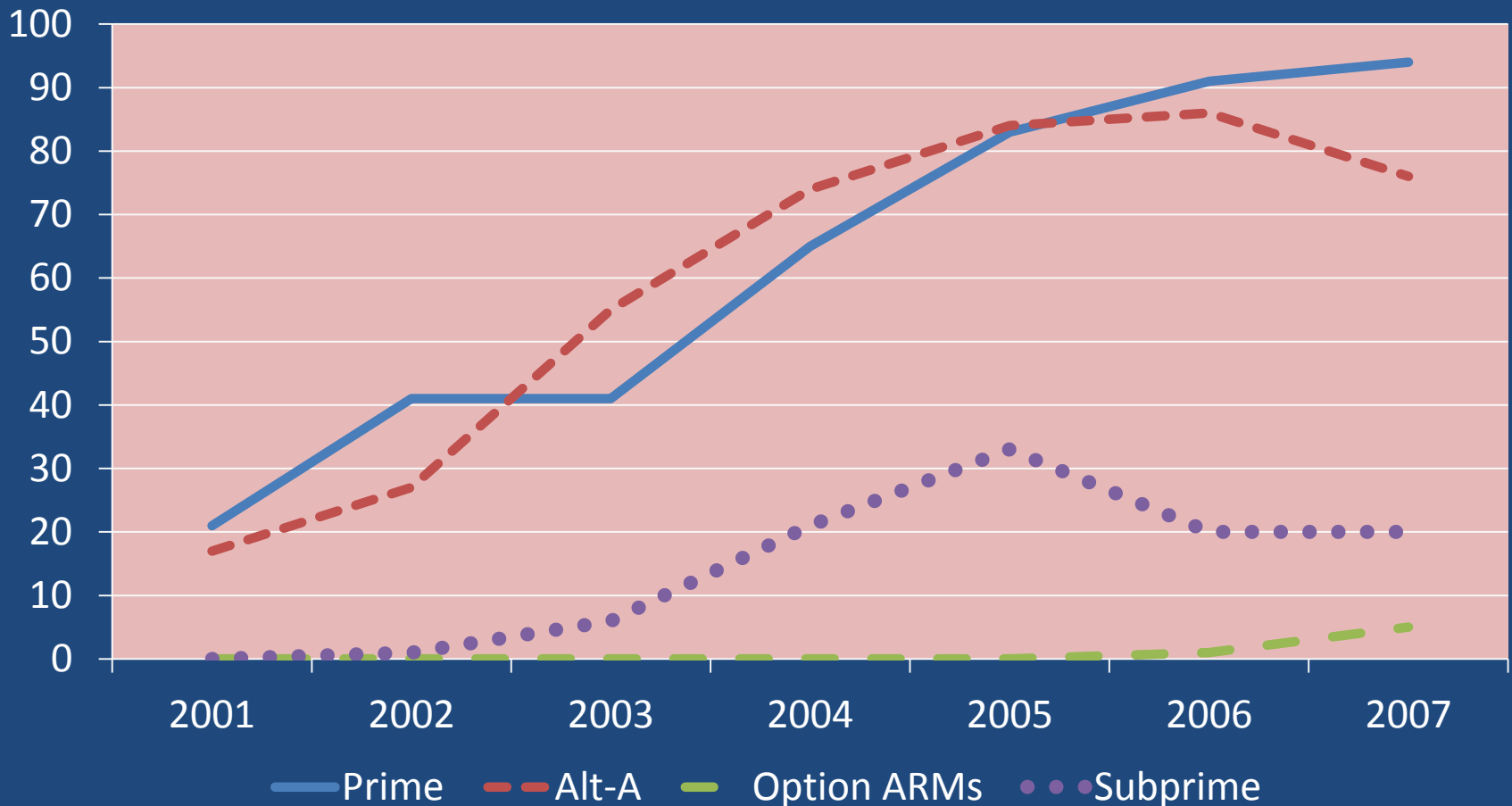
Source: Laurie Goodman, Amherst Securities

And the Percent of Full Documentation Loans Decreased for Nonagency Mortgage Securities. More potential for lying about income.



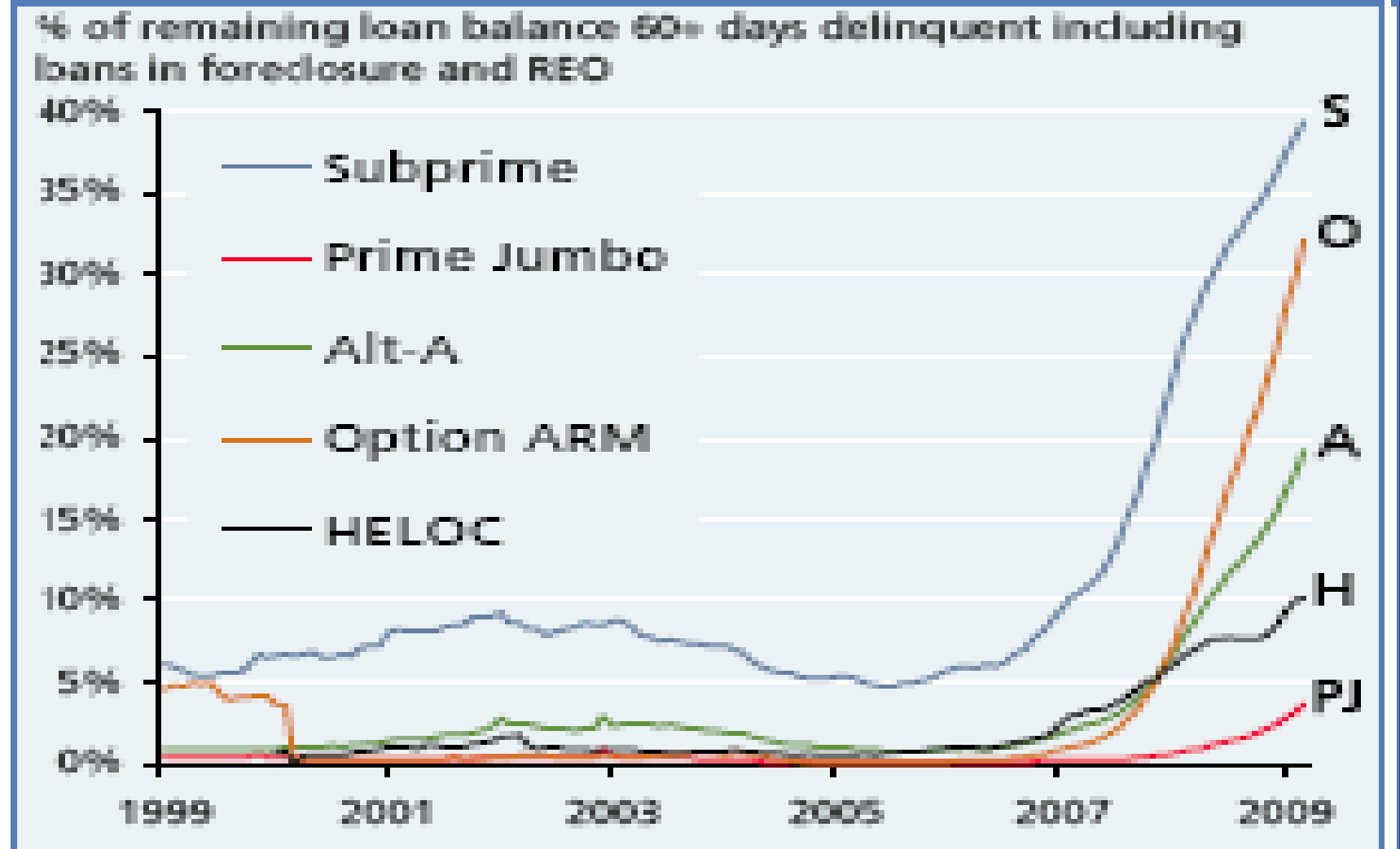
Source: Laurie Goodman, Amherst Securities

Percent of loans where borrowers paid interest only (no principal) increased, showing that many borrowers were stretching to make payments



Source: Laurie Goodman, Amherst Securities

Loan Delinquencies Blasted Off As Housing Prices Fell in 2007-2009



Source: J.P. Morgan Securities Inc., LoanPerformance. Data as of 3/31

Percent of Original AAA Universe Currently Junk Rated. Stunning Percentages.

Vintage	Prime Fixed	Prime ARM	Alt-A Fixed	Alt-A ARM	Option ARM	Subprime
2004	3%	9%	10%	17%	50%	11%
2005	39%	58%	73%	81%	76%	53%
2006	81%	90%	96%	98%	97%	93%
2007	92%	90%	98%	96%	97%	91%

Source: BlackRock Solutions® as of Feb 8, 2010

Lesson on Confirmation Bias in 2006-2007

- In 2006-2007, investors were looking for profitable investments, as yield spreads over LIBOR were tight.
- New mortgage pools formed in 2006/2007 had good FICO scores that gave confirmatory signals for purchases when spreads widened significantly in July-December 2007. Many investors and banks levered up then.
- More data was available (LTV ratios, interest only percentages, documentation percentages) that showed significant credit deterioration in recent loan pools. This data was apparently not processed well then and was largely ignored by many investors. It did not confirm what buyers and vendors wanted to see.
- Delinquencies blasted off on the new loans as housing prices fell and the credit vulnerabilities were exposed.

2. Overconfidence

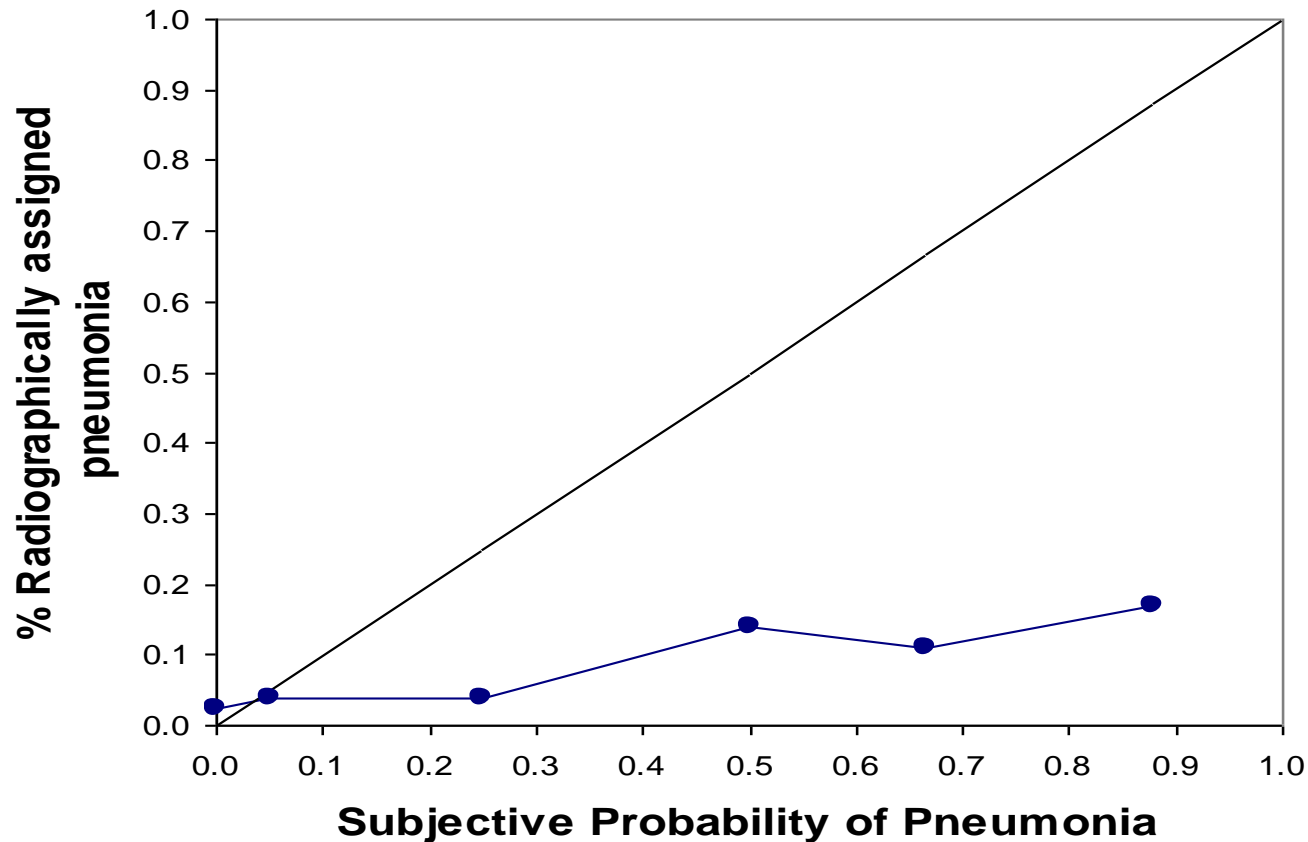
*And the Prospective Hindsight Approach to
Developing More Extreme Scenarios*

Overconfidence in Knowledge

- Overconfidence is the overestimation of the accuracy and precision of one's knowledge.
- What is (are) the overconfidence effect (s)?
 - Confidence that an answer is correct
 - Assessment of a confidence interval
- Overconfidence is related to skill assessments, e.g., ability to obtain alpha in investments. Differs from optimism which is an overestimation of the likelihood of good things happening to oneself.
- “The lesson you always learn is that your definition of extreme is not extreme enough.” David Viniar, Goldman Sachs CFO, NY Times, August 13, 2007.
- Joe Stiglitz, today at the American Economic Association Meetings, talking about financial crises: “Once-in-a-hundred-years events occur every 10 years.” He’s thinking of the stock market crash of 1987, the Long Term Capital Management crisis of 1998, and the current subprime-plus crisis — all of which involved changes in asset prices that were supposed to be vanishingly unlikely. Paul Krugman, NY Times Blog, January 4, 2008
- ***“Overconfidence is possibly the great deterrent to rational investing.” (Jonathan Clements, WSJ, 2/27/2001).***

Examples of Overconfidence

Physicians, after completing history and physical examination, estimated the probability that patients had pneumonia.



Overconfidence in Range Estimates

- “Over the next year, I expect the average S & P 500 return will be:
 - There is a 1-in-10 chance it will be less than ____ % =
 - example answer = -1.8%
 - Expected return: ____% =
 - example answer = 6.4%
 - There is a 1-in-10 chance it will be greater than ____%” =
 - example answer = 12.2%
- Actual S & P return = 2.7%
- Graham and Harvey CFO study

- **Graham and Harvey Study Results:**

Only 39% of CFOs' 80% confidence intervals included the actual return:

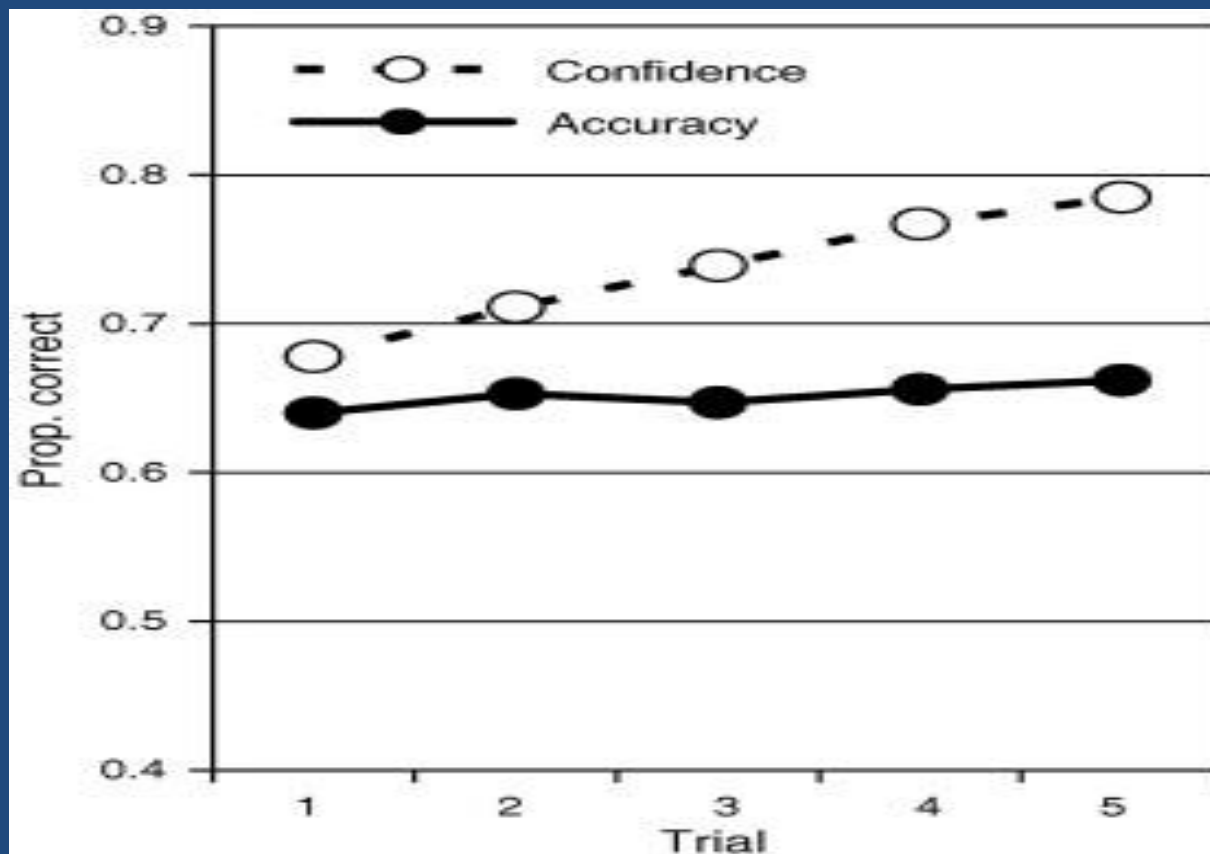
29.4% below and 31.5% above.

- **Soll and Klayman (2003) Study Results:**

80% intervals were found to contain the correct answer only 48% of the time.

The gap between confidence and accuracy grows wider with more information available (cont.)

Tsai, Klayman, & Hastie study ,2008



Judges may not be aware of the cognitive limitations that keep them from profiting from large amounts of good information.

--John Payne.

Predicted versus actual proportion of correctly chosen winners of college football games as the number of cues increased from 6 to 30. Same effect for confidence intervals (90%).

We need “out of the box” thinking about risks

- “The lesson you always learn is that your definition of extreme is not extreme enough.” David Viniar, Goldman Sachs CFO, NY Times, August 13, 2007.
- In a growing state of euphoria, “managers at financial institutions, along with regulators including but not limited to the Federal Reserve, failed to fully comprehend the underlying size, length, and potential impact of the so-called negative tail of the distribution of risk outcomes that was about to be revealed” (Alan Greenspan, 2007).
- We tend to gauge a “bad scenario” by looking at historical data . We need to think “out of the box” to worlds and equilibria not seen, but possible. Think of the condo building on the coasts and sunshine states (like Florida, Arizona, Nevada) and sensitivities of the demand for those units to falls in consumers’ wealths. Real estate’s illiquidity should have helped us see that large declines are indeed possible, even if few had been seen in existing data series.

“Prospective Hindsight” Approach Can Help Give More Realistic Extreme Scenarios

- Good thought experiment for managers on January 1 is: Assume that at the end of the coming year it turned out that : “We lost \$1 billion this year. How did it happen?” Brainstorm it. Come up with a number of scenarios where that could happen. Goldman Sachs uses this approach (WSJ).
- Breeden did this as an owner/leader and was shocked at how many scenarios his portfolio managers said could lead to these extreme events. They had knowledge not realized.
- This approach can help us flesh out the “tail risk” that has led to financial disasters for many of the firms in the headlines.
- This “Prospective hindsight approach” is described in book *Winning Decisions*, by J. Edward Russo and Paul J.H. Schoemaker, Currency Doubleday 2002, p. 112.

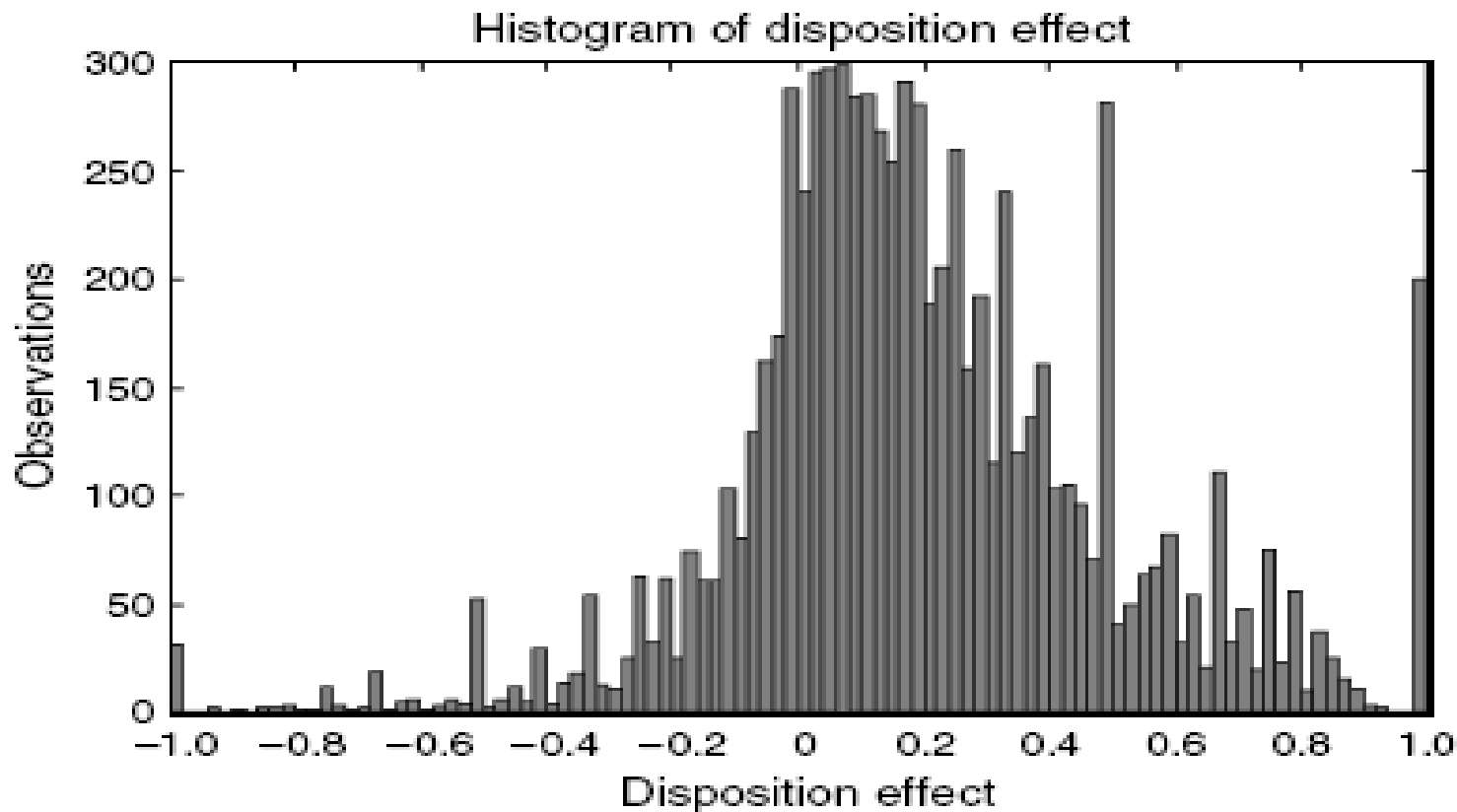
3. The Disposition Effect and Prospect Theory

When large losses are in progress, many portfolio managers let risks get large. This can turn a bad year into a disaster.

Disposition Effect

Research documents the tendency to sell previously purchased stocks that have appreciated in price and the reluctance to sell those that are trading below their purchase price. (Dhar & Zhu, 2006):

Figure 1 **Distribution of Disposition Effect (DE) of All Investors**



Credit Option for Corporate Bonds and Bank Loans

Nonlinear Risks in Corporate Bonds In 2007-2009:

Betas Increase in Bad Times

Dynamic Hedgers Need to Sell More As Prices Fall

- Junk Bond Return – 10 Year Treasury Return regressed on S&P 500 Stock Return:

1989-2006 Data: $-0.05 + \mathbf{0.20} \text{ SP500}$

$t=-0.3 \quad t=4.7 \quad \text{RSQ}=0.09$

2007-2009 Data: $0.16 + \mathbf{0.74} \text{ SP500}$

$t=0.2 \quad t=5.1 \quad \text{RSQ}=0.45$

- Baa Bond Return – 10 Year Treasury Return regressed on S&P 500 Stock Return:

1989-2006 Data: $0.02 + \mathbf{0.06} \text{ SP500}$

$t=0.3 \quad t=3.4 \quad \text{RSQ}=0.05$

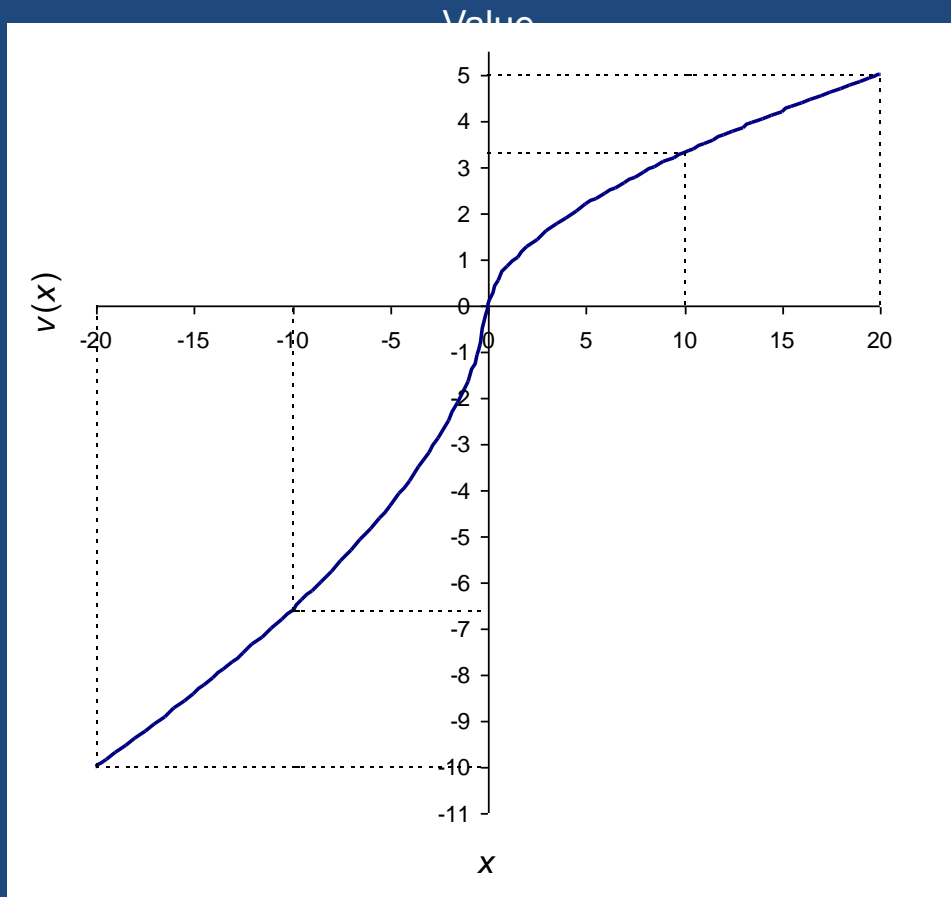
2007-2009 Data: $0.12 + \mathbf{0.36} \text{ SP500}$

$t=0.2 \quad t=3.7 \quad \text{RSQ}=0.31$

Prospect Theory: Value Properties:

Marginal Utility per \$1 of gain diminishes as gains get larger
Marginal Utility per \$1 of loss is very negative for small to moderate losses, less so for larger losses.

- Outcome



- Outcomes are defined with respect to reference point; world is divided into “gains” or “successes” and “losses” or “failures”
- “Losses loom larger than gains” (about twice)
- Diminishing sensitivity away from reference point
- Risk aversion for gains and “risk seeking” for losses. People hate to lose, but large losses are not proportionately distasteful, given the fact of a meaningful loss.

Global banks in crisis

Full coverage of the market turbulence: **NEWS Pages 2-6 COMMENT Page 15**
LEX Page 18 MARKETS Pages 30-32 ONLINE www.ft.com/lex

of the year

World Business Newspaper

Credit panic hits historic levels



Gloom: traders in Moscow yesterday, where trading on the dollar-denominated RTS index was halted after it lost more than 6 per cent in the first two hours

AP

Lending between banks grinds to a halt

US treasury yields lowest since 1941

By Krishna Guha in Washington,
 Michael Mackenzie in New York
 and Gillian Tett in London

The panic in world credit markets reached historic intensity yesterday, prompting a flight to safety of the kind not seen since the second world war.

Barometers of financial stress hit record peaks across the world. Yields on short-term US Treasuries hit their lowest level since the London Blitz. Lending between banks in effect halted and investors scrambled to pull their funding from any institution or sector whose future had been called into doubt.

The \$85bn emergency Federal Reserve loan for the troubled insurance group AIG, announced on Tuesday night, failed to curb the surge in risk aversion. Instead, markets were hit by a

Speculation mounted that the Federal Reserve, which refused to cut rates on Tuesday, could be forced into an embarrassing U-turn. Amid the financial chaos, traders were pricing in 32 basis points of rate cuts by the end of the month – essentially betting that there was a 60 per cent chance the Fed would cut rates by half a percentage point in the coming days.

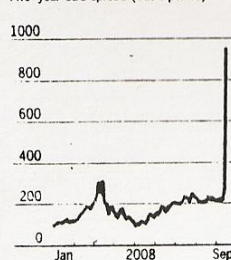
One cause for fear came when shares in a supposedly safe money market mutual fund fell below par value – or “broke the buck” – due to losses on Lehman Brothers’ debt. This raised the risk that retail investors in other such funds could panic and pull out their money.

All thought of profit was abandoned as traders piled in to the safety of short-term treasuries, with the yield on three-month bills falling as low as 0.03 per cent – rates that characterised the “lost decade” in Japan. The last time they were this low was January 1941.

Shares in the two largest independent US investment banks

Morgan Stanley

Five-year CDS spread (basis points)



Source: Markit

‘It feels like no one wants to take anyone’s credit... it feels like we are on a precipice’

Andrew Brenner
 MF Global

and Goldman Sachs – fell 24 per cent and 14 per cent respectively as the cost of insuring their debt soared, threatening their ability to finance themselves.

Repercussions were felt far beyond the US. There was turbulent trading in HBOS, a leading UK mortgage lender, which was forced – at the prompting of the British government – to enter into merger talks with fellow retail bank Lloyds TSB after drastic falls in its share price.

Lending between banks in Europe and the US in effect halted. The so-called Ted spread – the difference between three-month Libor and Treasury bill rates, which measures fear over banks – moved above 3 per cent, higher than the record close after the Black Monday crash of 1987.

The authorities fired back with the Treasury announcing it would borrow money to give to the Fed to use for its emergency lending – in essence removing any balance sheet constraint on the size of this assistance.

The Securities and Exchange Commission, the regulator,

selling that traders called draconian. Short sellers, who profit from share price declines, were widely blamed for the trouble at AIG. But these efforts failed to avert heavy selling, particularly of US financial stocks.

Many analysts criticised the US authorities for adopting an arbitrary approach to rescues – saving AIG but not Lehman – that was impossible for investors to predict and therefore did nothing to boost confidence.

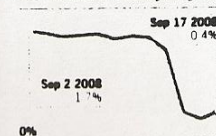
The S&P 500 fell 4.7 per cent, led by a 8.9 per cent slump in financials. Equity volatility was near its highest level since March. The dollar weakened slightly, while the Japanese yen rallied as risky currency funding trades were unwound.

Gold benefited from safe-haven buying, with prices at their biggest one-day percentage gain, up 11.2 per cent to a three-week high of \$866.47 a troy ounce.

Andrew Brenner, co-head of structured products and emerging markets at MF Global, said: “It feels like no one wants to take anyone’s credit... it feels like we are on a precipice.”

The day in summary

One-month US Treasury bill yield



Source: Thomson Reuters

Global markets

Three-month Treasury bill yield 0.02%
 FTSE 100 ▼ -2.25%
 S&P 500 ▼ -4.7%
Pages 30-32

HBOS

Lloyds TSB racing to rescue UK's largest mortgage lender
Page 6

Morgan Stanley

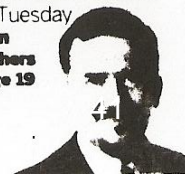
Shares were down 24 per cent in New York
Page 19

Lehman Brothers

Barclays polarises opinion with purchase of broker-dealer arm
Page 3

The Short View

Six things we have been asked to believe since markets closed on Tuesday
John Authors Page 19



Lesson: Ex Post Excessive Belief In Mean Reversion Can Make Dynamic Option Hedges Slow To Be Executed

- As prices fall, many option risks in mortgages and corporate bonds increase and need more hedges. However, just at those times, it is often the case that “spreads are wider” too. If one assumes mean reversion of spreads, then one is very hesitant to put on more (short) hedges.
- Thus, strong belief in mean reversion in spreads, which most traders have, can inhibit execution of dynamic hedges. It takes a lot of discipline to sell as prices are falling.
- For example, spreads for CMBS dramatically widened from less than 100 bp over Treasury to 330 bp in March 2008. Many investors might well have stepped in and bought CMBS at that time, betting on mean reversion of the spread.
- However, that spread high was a local high, as spreads widened to 700 bp spreads in November 2008. Additionally, high yield bonds and CMBS downgraded to Baa and junk levels had spreads of 1500 to 2000 (15% to 20%) over Treasuries.

Disastrous Credit Losses & Writedowns vs. Capital Raised

(in \$billion) Source: UBS, October 2008

No.	Firm	Loss	Capital	No.	Firm	Loss	Capital
1	Wachovia	96.7	11.0	28	Natixis	5.2	7.8
2	Citigroup	68.1	74.0	29	Indymac Bancorp Inc	4.9	0.0
3	Merrill Lynch	58.1	29.9	30	Goldman Sachs Group	4.9	20.6
4	Washington Mutual	45.6	12.1	31	Lloyds TSB	4.8	14.9
5	UBS AG	44.2	32.3	32	LB Baden-Wuerttemberg	4.4	0.0
6	HSBC	27.4	5.1	33	WestLB	4.3	6.7
7	Bank of America	27.4	55.7	34	Dresdner Bank AG	3.7	0.0
8	JPMorgan Chase	20.5	44.7	35	E*Trade	3.6	2.4
9	Wells Fargo	17.7	30.8	36	BNP Paribas	3.6	4.6
10	Morgan Stanley	15.7	24.6	37	Other US Banks	3.5	1.2
11	Lehman	13.8	13.9	38	Nomura Holdings Inc.	3.3	1.7
12	IKB Deutsche	13.8	11.4	39	HSH Nordbank AG	3.3	0.0
13	Royal Bank of Scotland	13.7	57.4	40	Rabobank	3.2	0.0
14	Other European Banks	10.7	2.7	41	Bear Stearns	3.1	0.0
15	Credit Suisse	10.0	3.0	42	Bank of China Ltd	2.5	0.0
16	Deutsche Bank	9.7	5.9	43	DZ Bank	2.4	0.0
17	Fortis	8.8	21.6	44	LB Sachsen AG	2.4	1.9
18	Credit Agricole	8.3	8.0	45	Sovereign Bancorp Inc	2.3	1.6
19	Barclays Plc	7.4	29.0	46	Unicredit SpA	2.1	0.0
20	Mizuho Financial Group	6.6	0.0	47	Commerzbank AG	2.1	0.0
21	HBOS Plc	6.6	27.1	48	ABN Amro	1.9	0.0
22	Bayerische Landesbank	6.5	0.0	49	Royal Bank Of Canada	1.9	2.6
23	Canadian Imperial (CIBC)	6.4	2.5	50	Fifth Third Bancorp	1.7	1.7
24	ING Groep N.V	6.3	4.5	51	Mitsubishi UJF Financial Group	1.6	8.6
25	Societe Generale	6.2	8.8	52	Dexia SA	1.5	2.3
26	National City Corp	5.4	8.9	53	Bank Hapoalim B.M.	1.4	0.0
27	Other Asian Banks	5.4	9.1	54	Marshall & Ilsley Corp.	1.3	0.0
Worldwide		660.9	623.2	Europe		228.5	258.2
Americas		407.8	342.7	Asia		24.7	22.3

4. “Memory Bias”

Too much weight given to recent history

Kahneman and Tversky (1976)

“This time is different”

Carmen Reinhart and Ken Rogoff book

The Turner report in the UK studied the 2008/2009 Financial Panic and suggested that one problem was that the history used in the empirical analysis was insufficient, often just 5-6 years.

Financial Market Quotes:

- Another global financial crisis is inevitable, according to former U.S. Federal Reserve Chairman Alan Greenspan, because of “the unquenchable capability of human beings when confronted with long periods of prosperity to presume that that will continue,” (2009, BBC).
- “Markets can remain irrational longer than you can remain solvent.” John Maynard Keynes.

Long Term Capital Management Performance 1994-1997

(Source: Rosenfeld MIT talk 2009)

Year	Net Return	Gross Return	Dollar Profit (\$ Billions)	Ending Capital (\$Billions)
1994	20%	28%	\$0.4 Billion	\$1.6 \$Billion
1995	43%	59%	\$1.3 Billion	\$3.6 \$Billion
1996	41%	57%	\$2.1Billion	\$5.2 \$Billion
1997	17%	25%	\$1.4 Billion	\$7.5 \$Billion

Summary of LTCM's 1998 Losing Trades

Source: R. Lowenstein, When Genius Failed

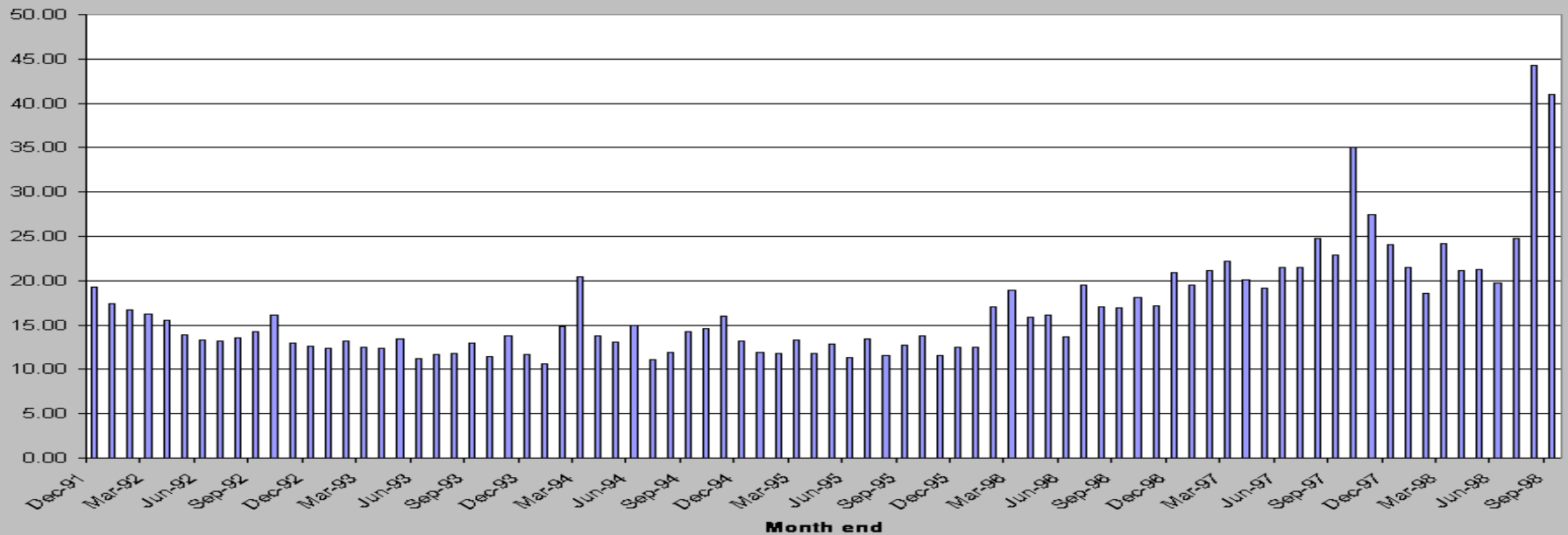
• Russia and emerging markets:	\$	430 mln
• Directional trades in Japan, dev		371
• Equity pairs (VW and Shell)		286
• Yield curve arbitrage		215
• S&P 500 stock entries		203
• Junk bond arbitrage		100
• Merger arbitrage		0
• Swaps		1,600
• Equity volatility		<u>1,300</u>
Total		4,500

Made Complacent by Recent History at LTCM?

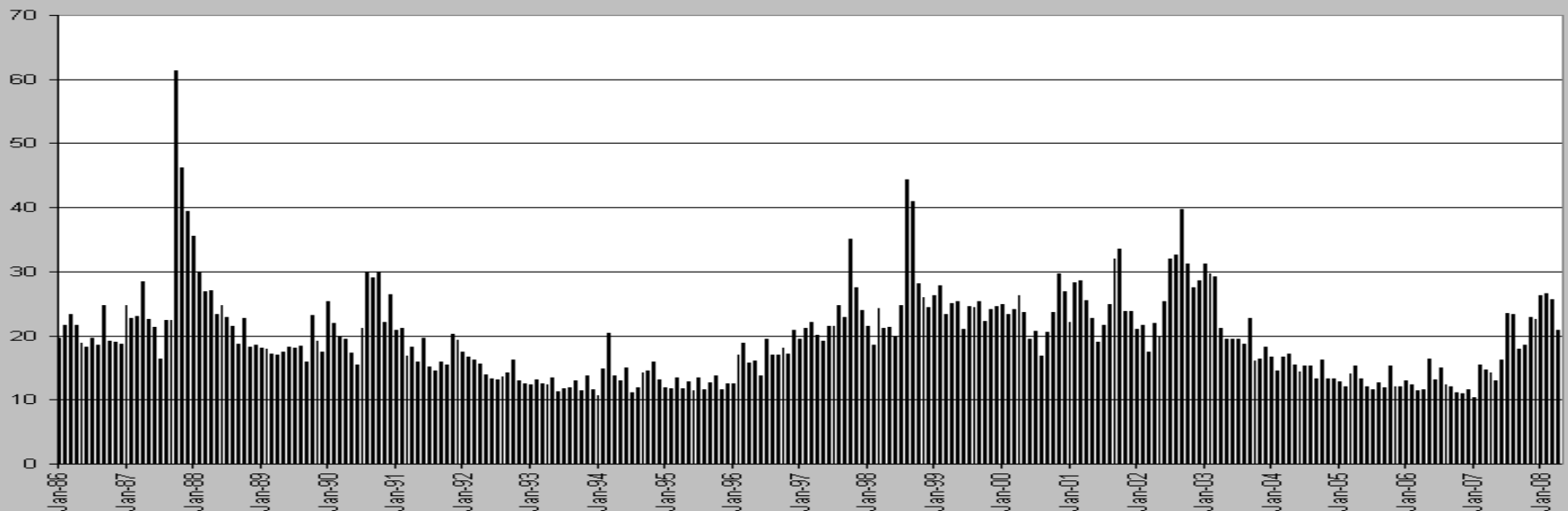
- As the next 3 slides show, when LTCM went down in 1998, moves in option volatilities, high yield bond spreads and swap spreads all appeared to hit extreme levels relative to the prior 5-7 years.

However, when a longer history is displayed, none of these moves were to levels not seen in the past 10-15 years. Some LTCM principals admit that they were probably lulled into complacency by the low volatility of their returns. Diversification worked better than they had expected. But they had only operated the hedge fund for 4 years and times had been great for these strategies for 7 years

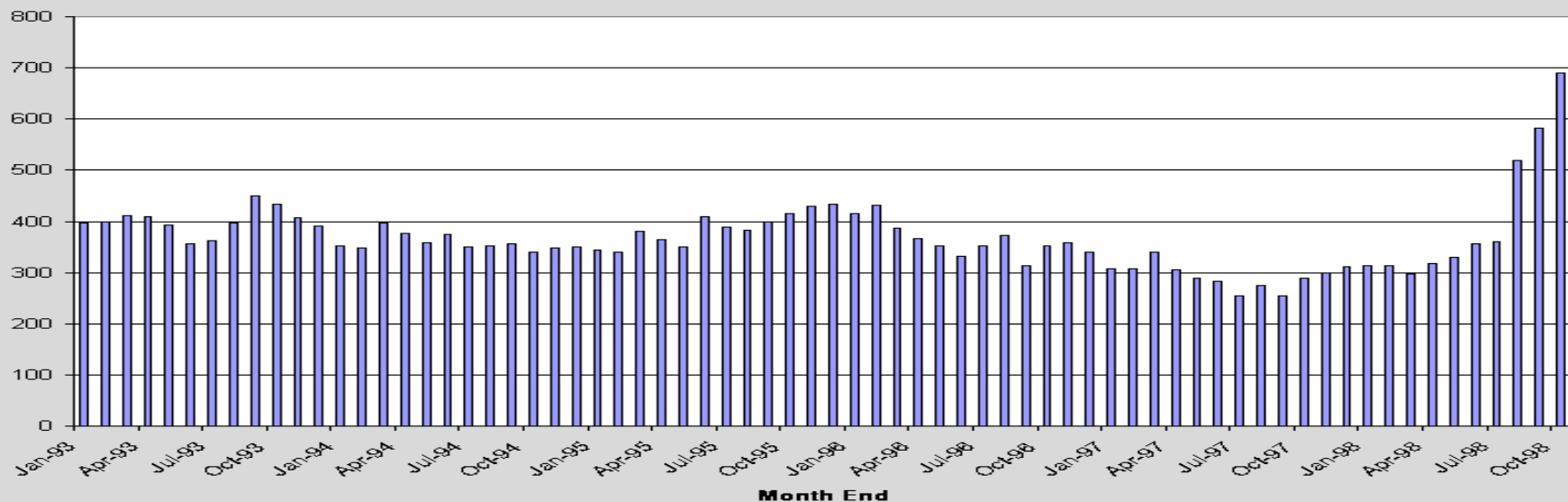
VIX: Implied Volatility from Option Prices 1992-1998



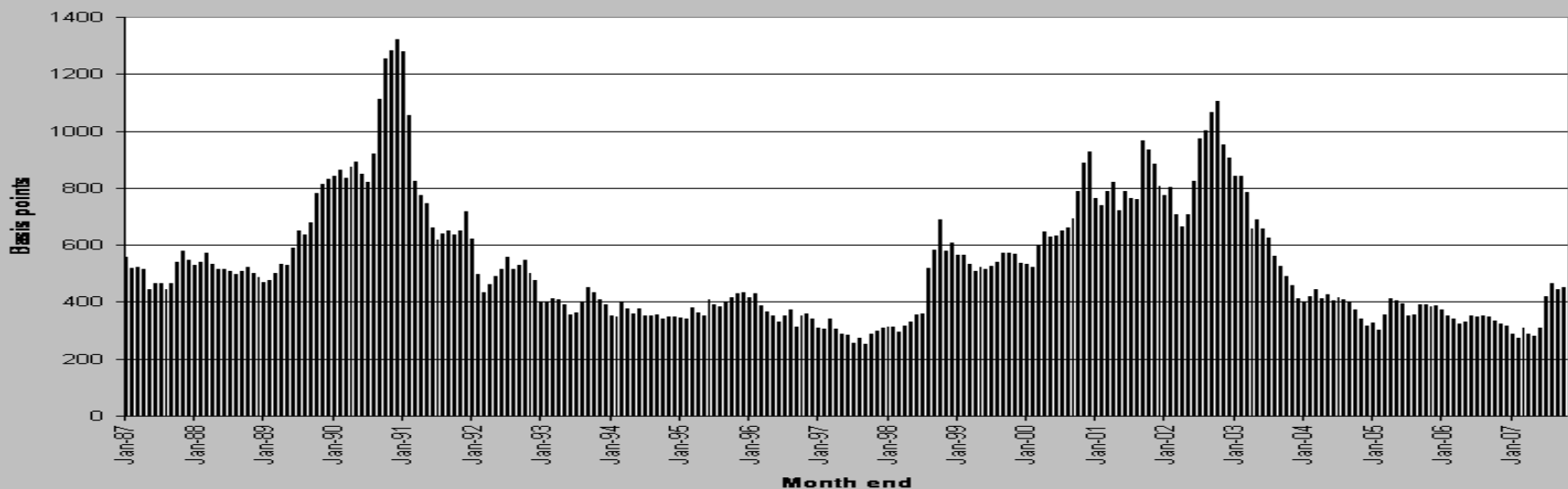
VIX Options' Implied Volatility 1986-2008



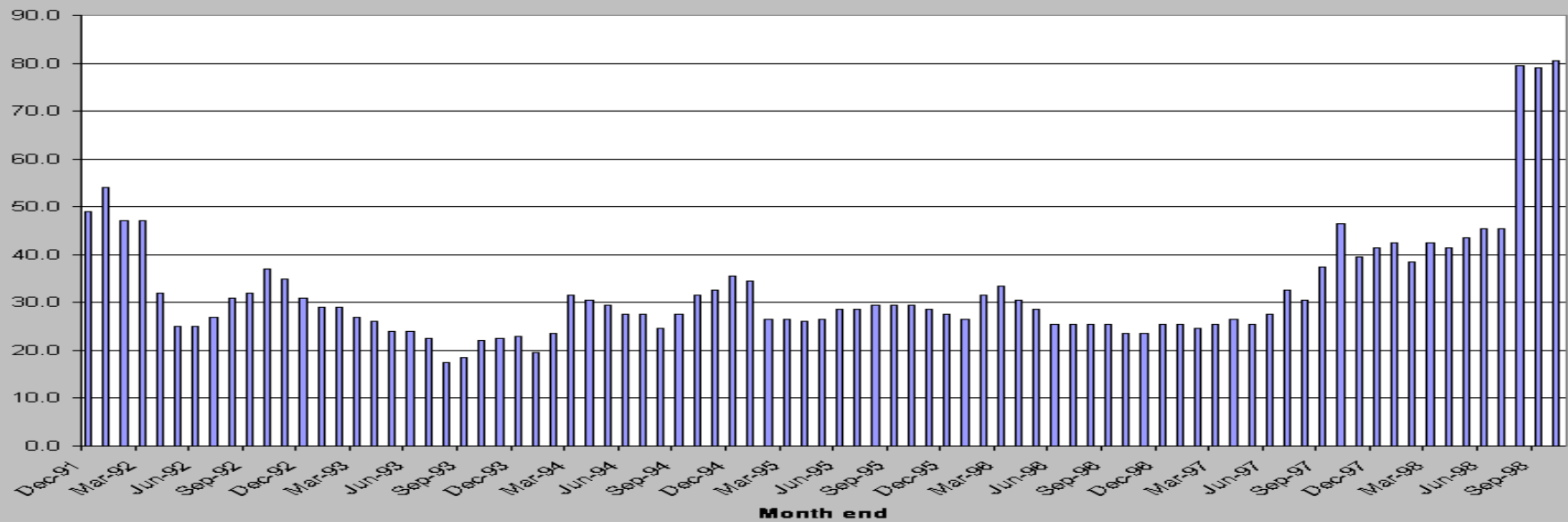
High Yield Bonds: Promised Spread to Treasury Yields 1993-1998, Basis Points



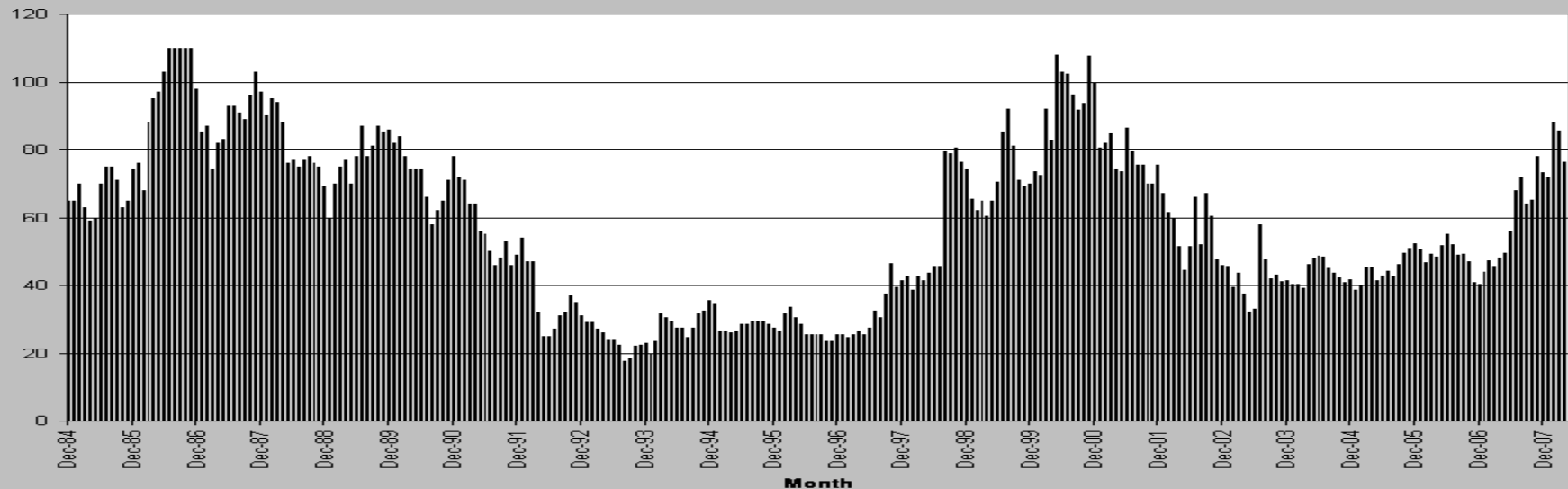
High Yield Bonds: Promised Spread to Treasury 1987-2007



5-Year LIBOR Swap Spread 1992-1998

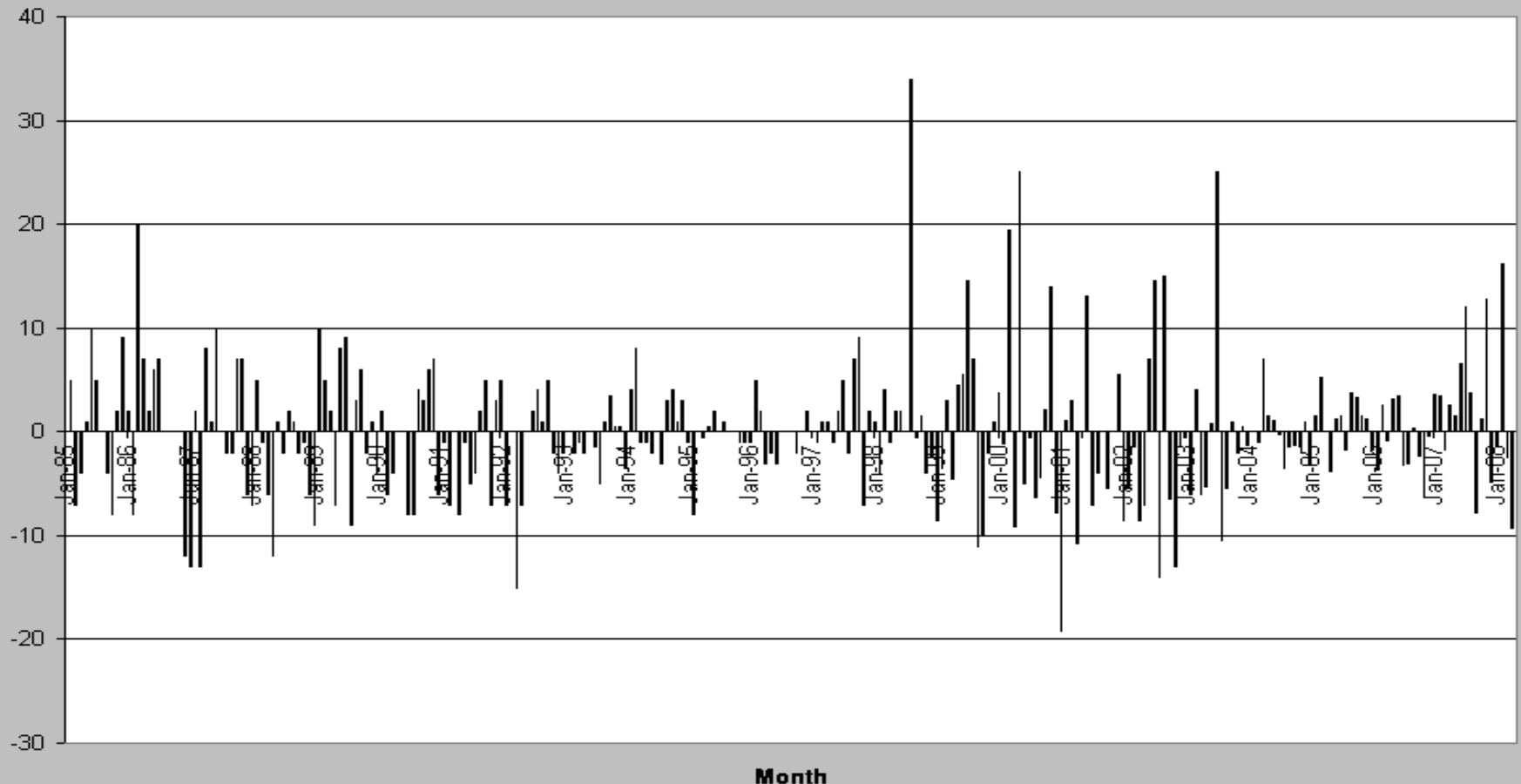


5-Year LIBOR Swap Spreads 1984-2008



However, the “verticality” of spread moves in 1998 was historic...

Change in 5-Year LIBOR Swap Spread 1984-2008



Summary of Research on Individual Decision Making Challenges

- Behavioral research shows that humans (even very smart ones with high character) see (1) what they *expect* to see and (2) what they *want* to see. This is the ***confirmation bias***.
- Research also shows that humans are ***overconfident*** in their abilities, and give too tight range estimates. This effect is worse as they have more information.
- Research shows that individuals display ***memory bias***, giving too much weight to recent data.
- Research shows great aversion to small and moderate losses (***disposition effect***) but less than proportionate aversion to huge losses. This can lead to risky behavior once significant losses have been sustained. These preferences are modeled in research on “***prospect theory***.”

5. Group Decision Making:

Committees Often Do Not Make Great Decisions, Though They Think They Do.

In this financial crisis, it is a safe bet that many billions of dollars “were lost by smart people trying to do good, honest work on behalf of others – usually as part of a committee.”
Jason Zweig, WSJ, 2009.

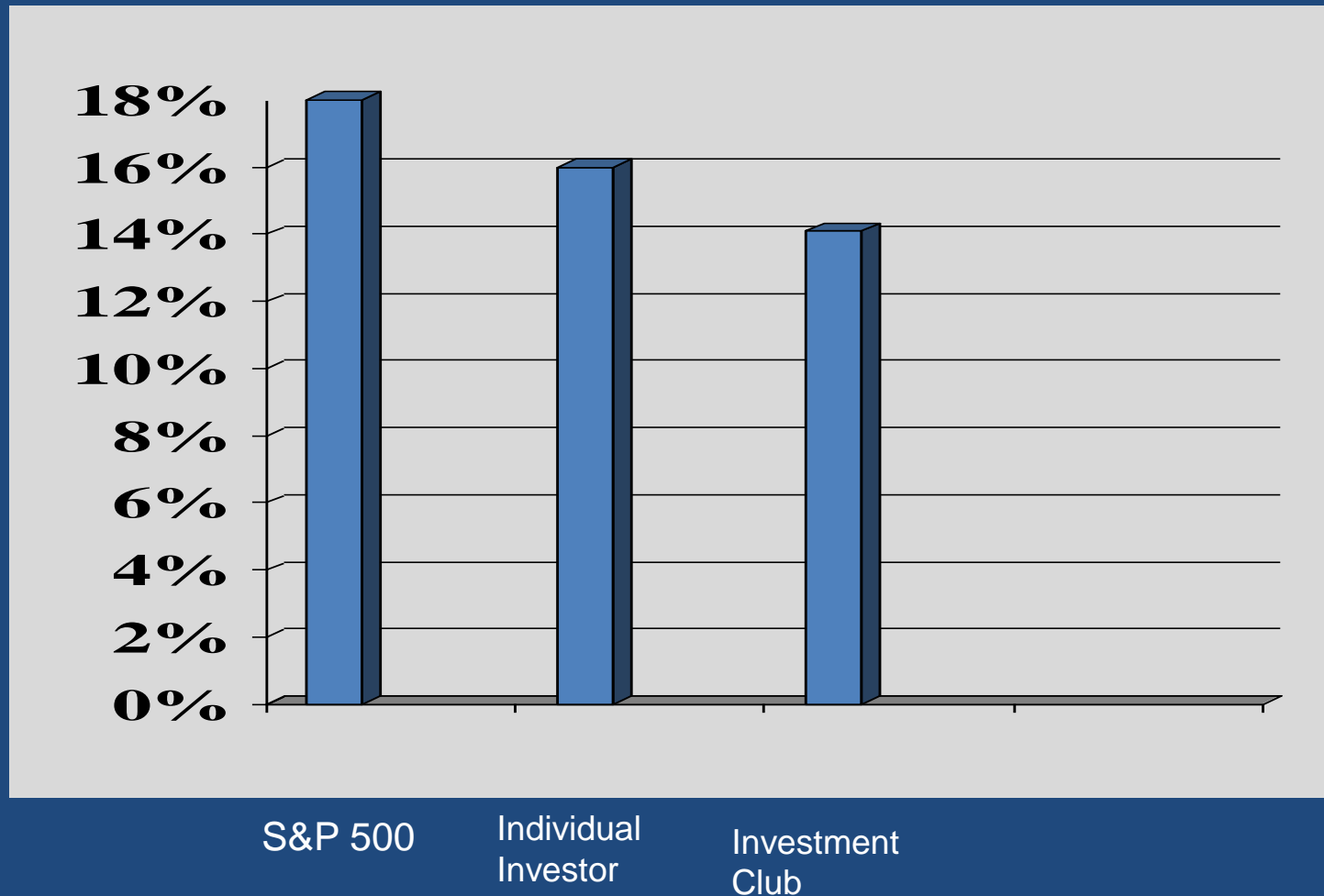


A survey of investment committee members (Vanguard, 2009) found that 80% of the respondents agreed with the statement, “My committee seldom makes bad decisions.”

Do groups help when it really matters in investments?

No, according to a study of 166 Investment Clubs

1991-1997 data examined by Barber and Odean, 2000



One Common Group Decision Making Finding: Groups are more confident and more accurate in range estimates, but still overconfident.

- What is the relationship between confidence in and accuracy of judgment with groups? - Plous (1995), Sniezek (1992)
- Ten items – 90% Confidence Intervals.

• Results:

	Individual	Group	Statistical	Estimated Individual	Estimated Group
# Correct 10	3.1	4.2	7.4	5.6	7.5

1. Groups are more confident and more accurate
2. Overconfidence is slightly reduced but still substantial
3. Statistical Pooling of Individuals much better.
4. Illusion of Group Effectiveness

Research Shows That Groups Underestimate Project Completion Time Even More Than Individuals Do

“The Planning Fallacy”

- Buehler et al. (2005)
- Is there a bias in estimates of the time needed to complete a project?
- Does group discussion affect this bias?

Study	Individual	Group	Actual
One (days)	45.16	42.25	59.31
Two (days)	1.87	1.07	2.30

Most committee discussion focused on ways the task could be accomplished efficiently. When others judged plans, more attention given to potential impediments.

Group Performance = Group Potential + Process Gains – Process Losses

Group Process Gains



Sources of Process Gains:

- 1) More information to be shared.
- 2) Diversity of Thought Strategies or Tools.
- 3) Error checking of facts and reasoning.
- 4) Incorporation of Different Values.
- 5) Canceling out of “random” errors – Wisdom of Crowds.

Sources of Process Losses:

- 1) Poor and/or biased information sharing.
- 2) Herding or Cascades of Opinions.
- 3) Reinforcement (Polarization) of attitudes.
- 4) Conflict from value differences.
- 5) Social Loafing and Conformity.

Group Process Losses

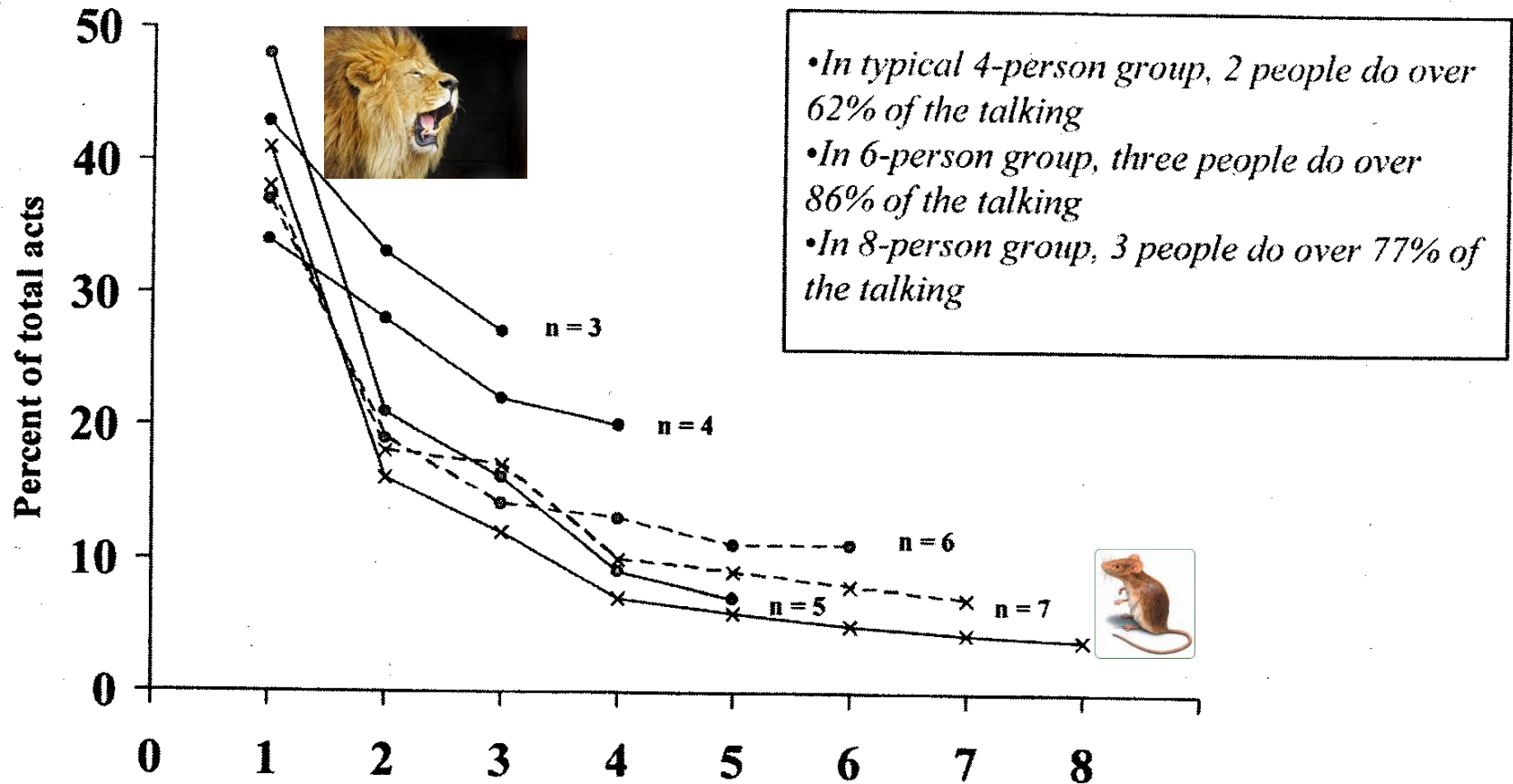
Suggestions on Group Composition -- 1:

The major source of group potential

- Group formation tends to be guided by the principle of similarity among potential group members.
- It takes approximately a group membership of size 16 with an inter-judge correlation of $r = .3$ to equal the accuracy of a 4 person group with an inter-judge correlation of $r = 0$.
- The implication is clear, resources would be better spent on identifying independent (less correlated) judges than on increasing the number of judges.
- What is the “ideal” group size?
 - Goals: Accuracy, commitment, value diversity, etc.
 - Three, five, or more?
 - Diversity of opinions– bracketing of opinions
 - With diversity, truth supported wins?

Problem 1: Getting everyone to contribute

“Lions and Mice”: Total amount of talking as a function of speaker rank - a universal law of social behavior

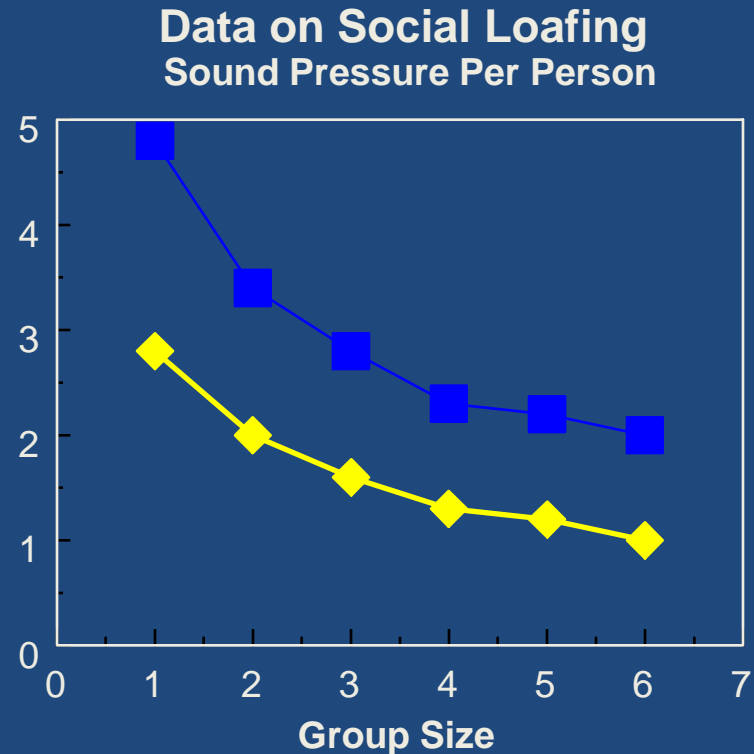


Rank of the Speaker from 1 (most talkative) down ... (to 8 - least talkative)

Problem 2: Social Loafing

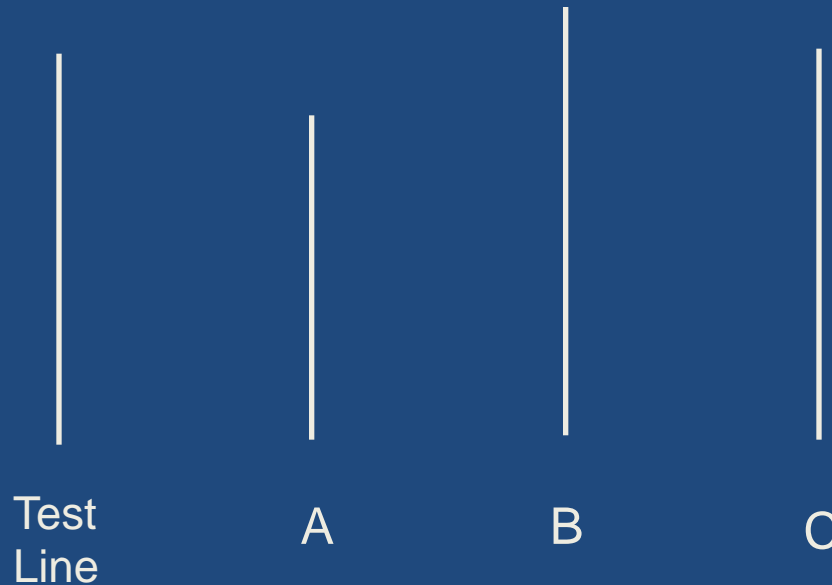
Example: Marketing Committee when Duke Dean

- Blue Ribbon committee of 16 appointed produces very weak, biased report. Why?
- Evidence suggests that individuals working in groups may not work as hard as individuals working alone.*
- Reasons for this?
 - Link between effort and outcome is weak.
 - Diffused responsibility



*There may be cultural differences, e.g., individualistic vs. collective cultures.

Problem 3: Social Conformity



The classic Asch experiments



Is the test line equal in length to A, B, or C?

Results of Conformity Research

- When asked to judge individually - 1% wrong
- When one person says "B" before, 3% wrong
- When two people say "B" before, 13 % wrong
- When three people say "B", 33% wrong.
- When 6 say "B" but 1 says "C", 6% wrong (no fear of isolation)*
- Pre-commitment
 - paper 8% wrong
 - magic pad 14% wrong

**Truth supported wins. Implications for managing diversity in group membership?*

Suggestions for Improvement-1

Leadership Matters

- Leaders should avoid giving their opinions first.
 - I have heard your views. They do not harmonize with mine. The decision is taken unanimously. **Charles de Gaulle**
 - If we are all in agreement on the decision - then I propose we postpone further discussion of this matter until our next meeting to give ourselves time to develop disagreement and perhaps gain some understanding of what the decision is all about. **Alfred P. Sloan**
- Leaders should make the value of all the members of the group clear and balance participation.
- Leaders should monitor and manage the quality of group processing as it unfolds over time.

GroupThink

- Groupthink refers to a mode of thinking that persons engage in when concurrence-seeking becomes so dominant in a cohesive in-group that it tends to override realistic appraisal of alternative courses of action.
- Conditions
 - "The more amiability and esprit de corps there is among the members of a policy-making in-group, the greater the danger that independent critical thinking will be replaced by groupthink." I. Janis
 - A powerful opinionated leader
 - Stress
 - Lack of an explicit decision-making procedure.

Other Failures of Deliberating Groups

- Group members ignore their private knowledge and rely instead on the publicly stated judgments of others. Sunstein and Hastie (2008) refer to this as a “cascade”.
 - Informational cascades involve the use by one judge of another’s final judgment without disclosure by the other of what they may know, i.e., the facts and reasoning underlying the judgment. This results in poorer information sharing.
 - Reputational or maintaining the good opinion of others. People want to be perceived favorably by other group members. This is increasing true with greater identification with the group.
- Like minded people, having deliberated with one another, become more sure that they are right and thus more extreme in their judgments. Corroborated views are held with greater confidence.
- **Both the above “bias” and reputational cascades are likely to increase over time as group members interact more and more together.**

Suggestions for Group Improvements - 2

- Manage information sharing as an active process, e.g., identify people with unique information.
- Diverse information should be surfaced relatively early in the process.
- A thorough group process ensures that all diverse—and conflicting—evidence that has been presented is weighed before the decision
- Actively work against the confirmation bias.
- Encourage conflict of ideas, not conflict among people. This is a balancing act when preferences are likely to be diverse.

Suggestions for Improvement - 3

- Train individuals to avoid judgmental biases, do not count on committees to correct for systematic bias in judgment.
 - Herzog and Hertwig (2009), for example, suggest training people to access different knowledge by asking them to assume their first estimate is wrong, and then ask why. What they call “dialectical bootstrapping.”
- Groups should agree upon and monitor “good” decision processes, e.g., ignoring sunk costs or incorporating base-rate information. “Error checking” on processes.
- Time spent on getting agreement on process is seldom wasted. Group accountability for the process not just outcomes.

Conclusions

1. Research shows that humans make errors in decision making, reflecting overconfidence, overweighting of recent events, and biased searches for confirmatory data.
2. Groups have potential for improved decision making, but often are not better, and can actually do worse than combining information from individuals without group interaction.
3. Risk management in financial institutions is done ultimately by humans and groups of them. Errors likely reflect documented biases and errors in individuals and group decision making. These risks can be reduced with training of individuals and groups in decision making, as well as by careful group formation, leadership and operation.

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Douglas T. Breeden

Douglas T. Breeden is the William W. Priest Professor of Finance and former Dean of Duke University's Fuqua School of Business. He is also the Fischer Black Visiting Professor of Financial Economics at the Sloan School of Management at the Massachusetts Institute of Technology for 2011- 2013 . He has served on faculties at the University of Chicago, Stanford, and North Carolina, where he was the Dalton McMichael Professor of Finance.



Breeden has published well-cited research on the consumption capital asset pricing model (CCAPM), as well as on mortgage securities and hedging. His 1979 article on intertemporal portfolio theory and the CCAPM was one of the Top 10 most-cited articles in the Journal of Financial Economics in two decades. He was the Distinguished Speaker at the Western Finance Association Annual Meeting in 2005. His current research is on "Consumption as A Leading Indicator."

He was the Founding Editor and Editor for 10 years of The Journal of Fixed Income, and served as Associate Editor of The Journal of Finance, The Review of Financial Studies, The Journal of Financial and Quantitative Analysis, The Journal of Financial Economics and The Journal of Money, Credit and Banking. In 1988, he was elected to the Board of Directors of the American Finance Association and in 2010 was elected a lifetime Fellow.

As Dean (2001-2007) at Duke's Fuqua School of Business, Breeden led a large growth in faculty, distinguished professors, and the Ph.D. program, as well as construction of a new library and classroom building, now named Breeden Hall. As a teacher, Breeden won an "Outstanding Teacher" award at MIT Sloan in 2012, and was a runner-up at Duke in 2011.

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Payne has a B.A. in Mathematical and Computer Models in the Social Sciences, and an M.A. and Ph.D. in Psychology, all from the University of California, Irvine. His research deals with how people make decisions, and how decision making might be improved. Among the topics he has studied are risky choice behavior, task complexity and information processing in decisions, context effects on choice, emotions and decision making, jury decision making dealing with punitive damages, valuation of environmental resources, and consumer financial decision making.

Payne has authored or edited four books and over 90 journal articles and book chapters. Research awards include the Leo Melamed Prize for business research from the University of Chicago (2000) and the first (2002) Journal of Consumer Research award for long-term contribution to consumer research.

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