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Subprime Risk Management Lessons

An 10 minute overview...

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Alan Laubsch

alan.laubsch@riskmetrics.com



The Subprime Risk Management Failures

The subprime crisis represented a colossal risk management failure for many organizations

- As of Oct '08, \$670bn+ credit losses since '07; \$1-1.5tn potential industry losses
- Commonly cited systemic reasons include excess leverage, illiquidity, contagion
- Failure of credit rating agencies, and too much reliance on ratings
- Failures in risk measurement and monitoring, concentration analysis, stress testing
- Major organizational and cultural issues

Was the U.S. Subprime incident a “Black Swan,” an unforecastable extreme tail event?

- In fact, many analysts (including RiskMetrics CFRA) gave early warnings about the US housing bubble burst, and a number of firms positioned themselves to profit from this risk

Robert Shiller: “There was a failure to communicate and a failure to put all this information together and act on it in a systematic way” Source: Portfolio.com, “World According to Robert Shiller,” by Lloyd Grove

Importance of Enterprise Risk Management



Firms with strong enterprise risk management cultures excelled, while organizations where risk is managed in silos failed

One thing is clear: the hardest hit banks, from Merrill Lynch to Citigroup, shared a siloed approach to risk, with insufficient communication among risk, finance, and operations. – Source: CFO.com, “Missing Pieces” by Avital Louria Hahn, March 2008

The industry is recognising that firms that have skirted subprime disaster owe their success in part to robust risk management programmes. Among the regulators’ conclusions are that firms with a comprehensive approach to risk management, where assessment of the exposure to risk is integrated throughout the organisation and where there is effective sharing of information, have dealt more successfully with the credit crunch and disappearing liquidity. Source: FT.com, All minds focus on the urgent issue of risk, Beagan Wilcox

Risk managers need to be perceived like good goalkeepers: always in the game and occasionally absolutely at the heart of it, like in a penalty shoot-out. Source: Economist.com, Confessions of a Risk Manager

Bear Stearns High Grade Structured Credit Strategies Fund



Bear Stearn's High Grade Structured Credit Strategies Fund, managed by Ralph Cioffi imploded in May 2007, wiping out investors' capital (over \$1.7bn)

- Investors up 46.8% from Oct '03 to Mar '07 w/ 30+ months of consecutive positive returns. Strategy was to buy high grade subprime CDO tranches, and use leverage of up to 20x to extract returns from positive carry (Short ABX "hedge" put on late 2006 resulted in the fund's first loss when ABX rallied in March after a sharp drop in Feb).
- Rating Agencies assigned high ratings due to low historical defaults (... in a rising US housing market!)
- Warning signs – extremely high autocorrelation of returns (Box-Ljung test $p=10^{-15}$) point to illiquidity and potential valuation issues.

HFR Database Returns Analysis of 165 fixed income funds with data from October 2003 through February 2007

- 25th percentile p-value 41%
- 50th percentile p-value 9%
- 75th percentile p-value 0.8%

Outliers ... five funds with p-values smaller than 10^{-7} :

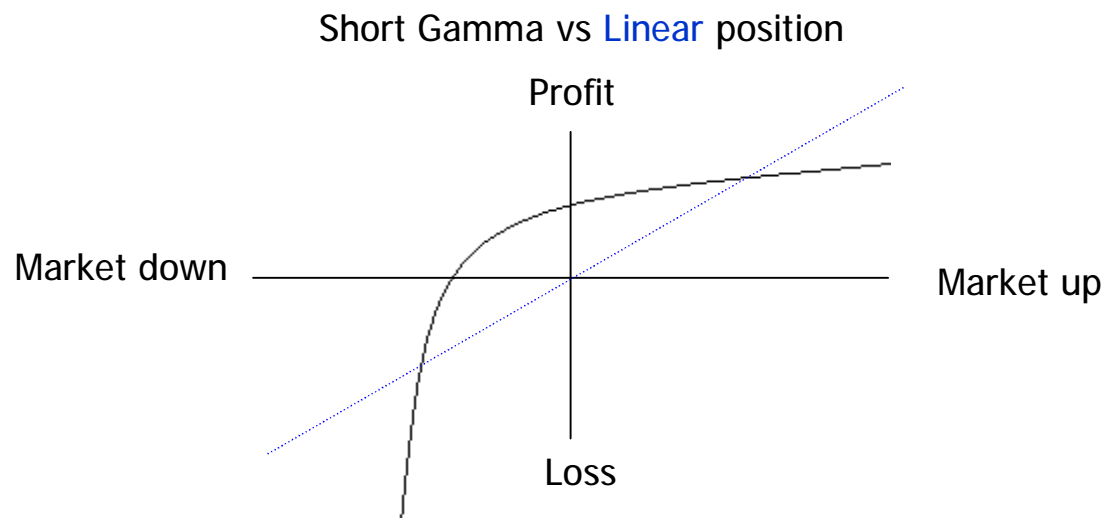
- Bear Stearns High-Grade Structured Credit (10-15) closed in June
- Galena Street (10-7) closed in July

Source: Chris Finger, "A Subprimer on Risk," August '07 RiskMetrics Research Monthly



Lessons for Investors in Bear's Funds

1. Realized HF returns are NOT a good measure of risk. Need to understand what's generating return. In fact, persistent positive returns with high autocorrelation are a warning sign
2. Demand full risk transparency and understand what's true alpha and what's alternative beta (e.g., carry generated through credit, term, fx, vol, etc.)
3. Avoid Illiquid Assets + Leverage + Short Gamma (or accelerating losses)



Leveraged Credit Strategies & Contagion



Levered L/S credit strategies got crushed with contagion... short gamma

- Morgan Stanley: \$2bn short subprime, \$14bn long AAA subprime paper
- Peleton Partners: \$2bn ABS fund held \$17bn AAA prime, short \$6bn BB & lower subprime paper

Pure leveraged short subprime bets performed extremely well... long gamma

- Limited downside, huge upside potential: e.g., a 10x leveraged subprime strategy might have a 20% annual downside (10x200bps) but a 1000% upside
- Winners included funds that entered short subprime positions in 2006 Paulson, Corriente, Lahde, Hayman...

"We were saying that there were going to be \$1 trillion in loans in trouble," Bass says. ``That had really never happened before. You had to have an imagination to believe us....

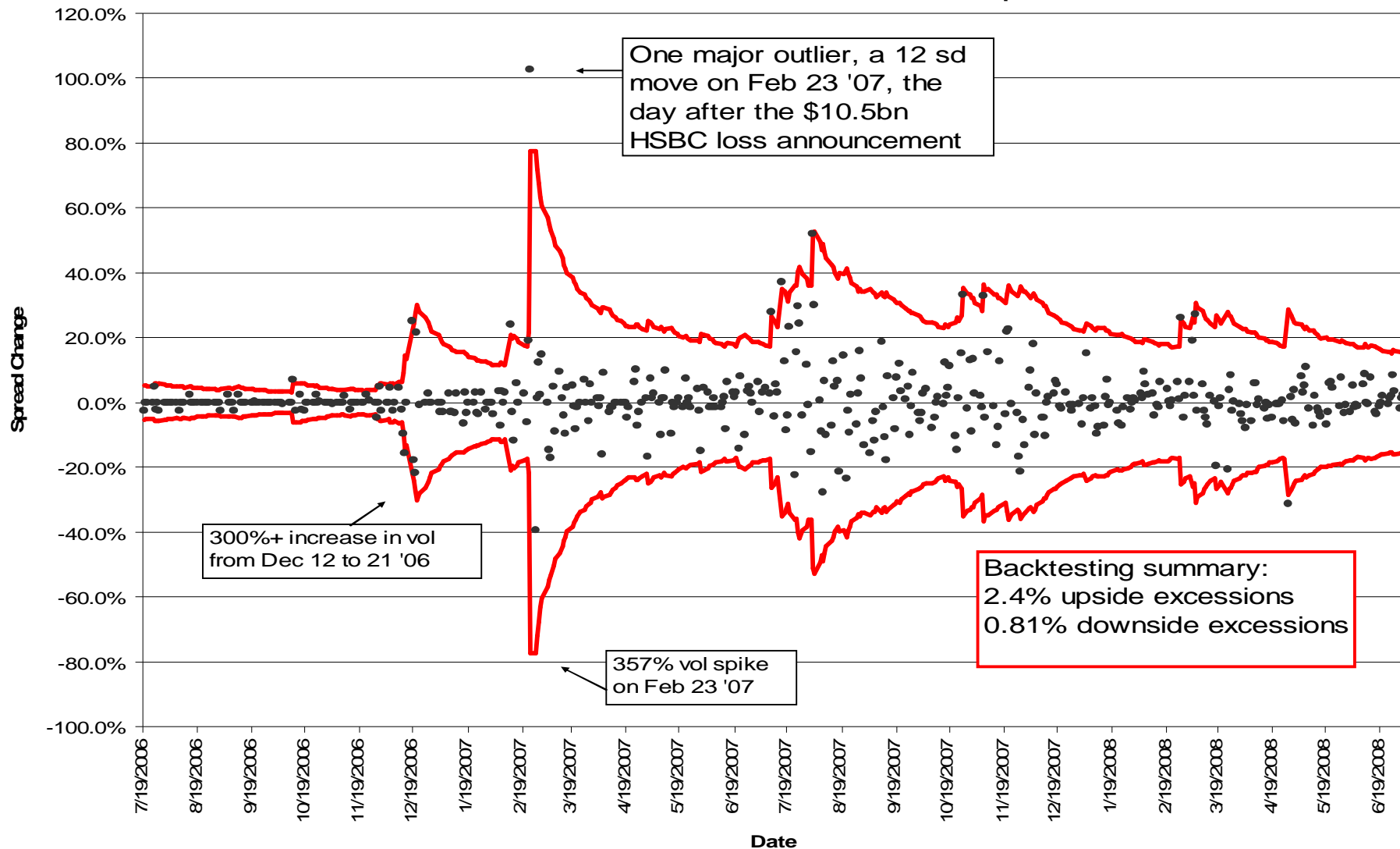
"Interesting presentation," Bass says the firm's chief risk officer said into his ear, his arm draped across Bass's shoulders. ``God, I hope you're wrong." – Kyle Bass, Hayman Capital on Bloomberg News

While some banks put on subprime hedges to limit their losses, banks are structurally leveraged long credit. Basel 2 rules only require banks to put aside 0.56% regulatory capital for AAA securities.

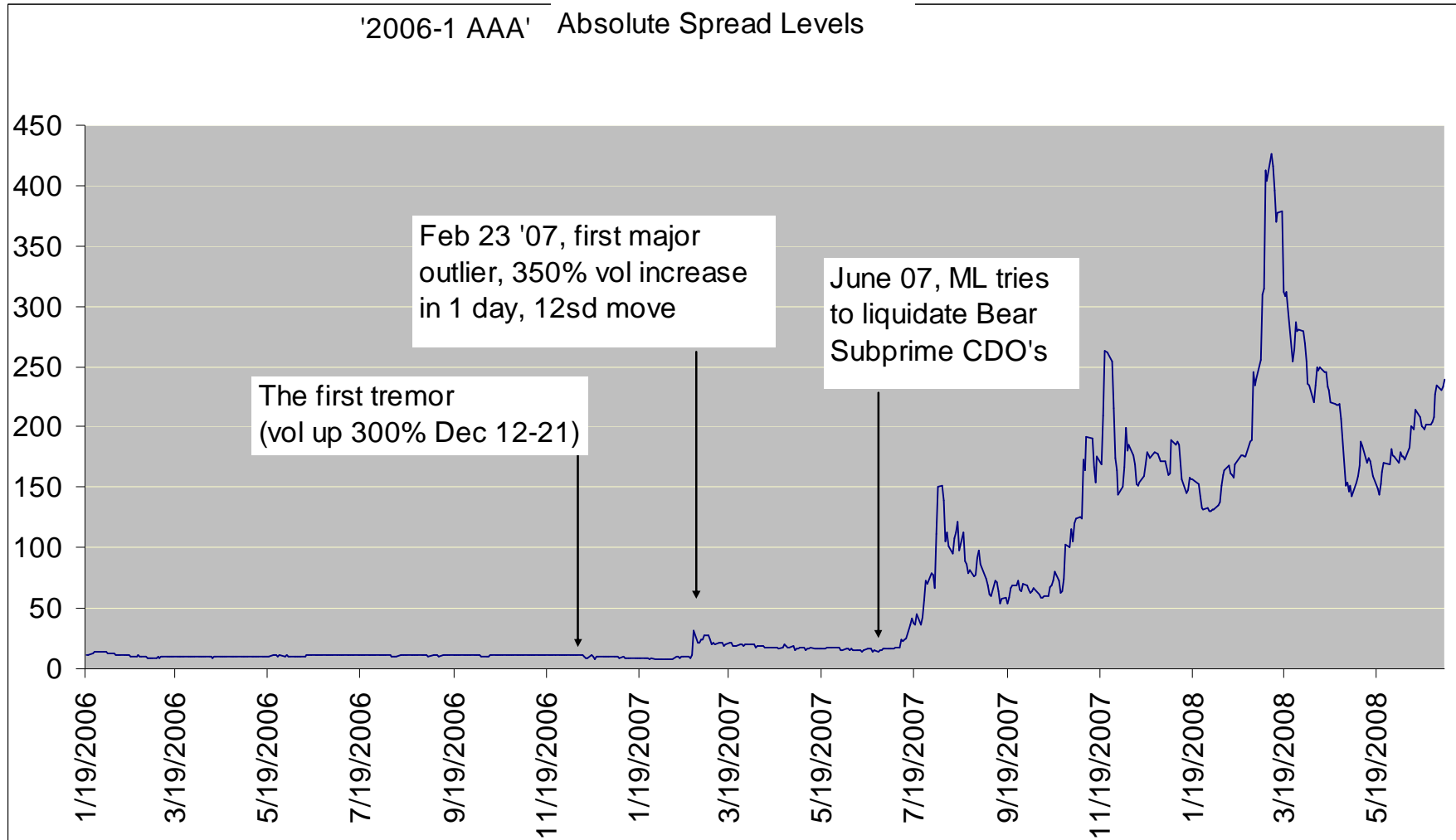


Did VaR forecast the U.S. Subprime crisis?

RM 2006 99% VaR bands vs 2006-1 AAA spread



Responsive VaR estimators provided ample time to hedge...



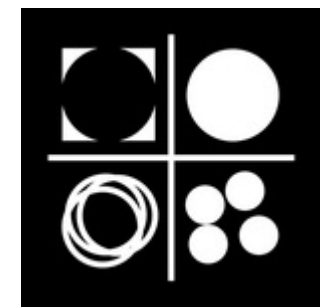
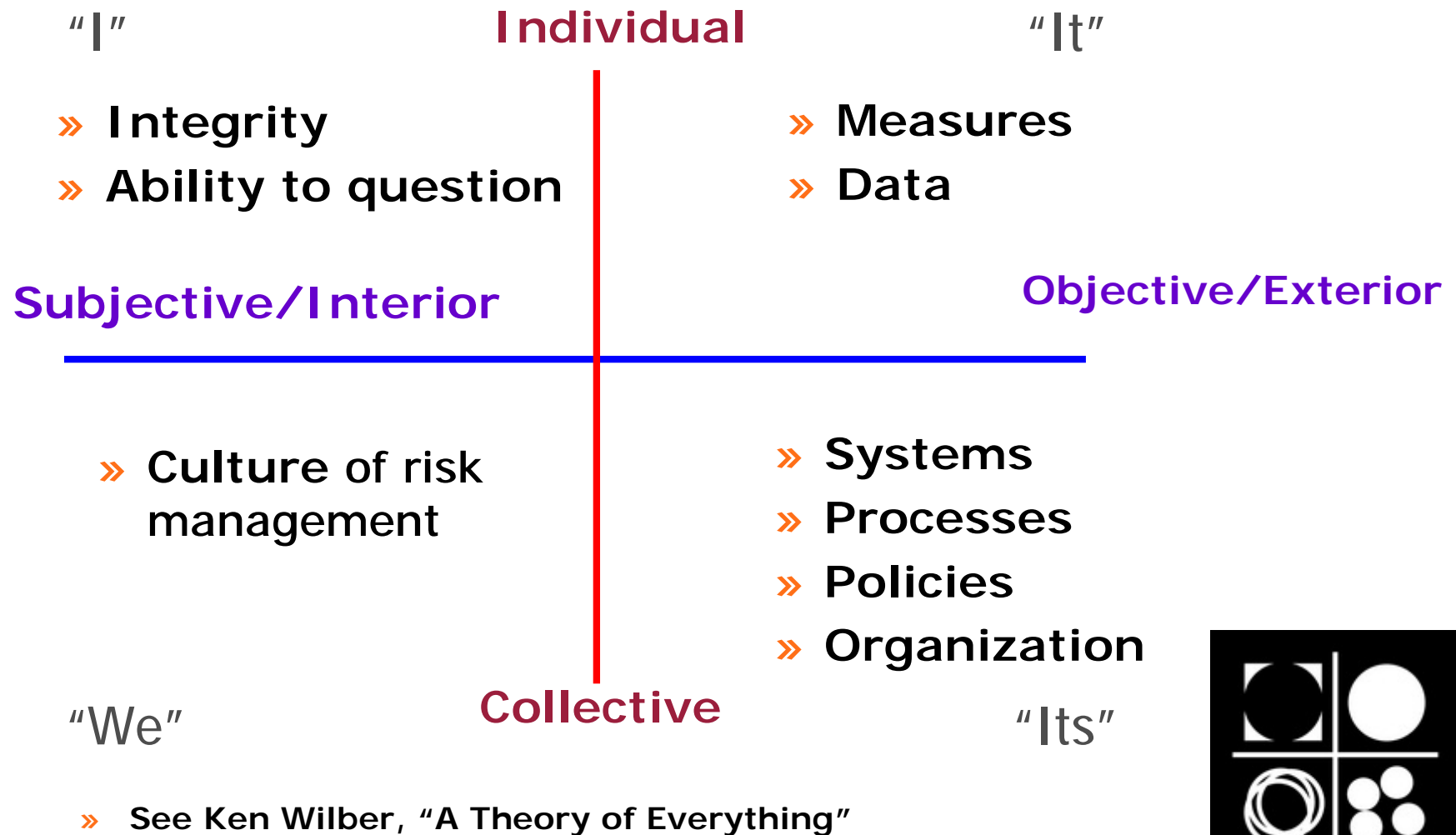
No Shortage Of Hypothetical Stress Tests To Consider



- GaveKal European Divergence Scenario
 - Italy's continues to have budget deficits, ballooning debt, and eventually exits EUR
 - Real estate & construction slowdown in Spain, Portugal, Greece
- Roubini U.S. Credit Contagion & Recession
 - Subprime to Prime Contageon (2/3 of all '06-'07 mortgages had risky features)
 - Muni selloffs & defaults (lower fees from developers and house taxes, fixed expenses)
 - U.S. consumer slowdown
 - Corporate Bond Defaults increase. Current avg: .6%'; LT avg: 3.8%; Recession: 10-15%
 - Recovery rates: from 70% in benign environment to 30% during recession
 - Shallow U.S. recessionary to longer / deeper recession (12-18 months), impact on global growth
- Oil Spike (Iranian blockade; Saudi coup; natural disasters; war...)
- Market / FX shocks (Asian currency revaluation, \$ bust/boom, EUR bust/boom...)
- Themes (BRIC growth, changing consumption patterns, baby boomer retirement...)
- Economic scenarios (inflationary bust, deflationary bust, inflationary boom, deflationary boom...)
- Avian Flu & other diseases
- Environmental risks (Tokyo earthquake, Storms, Tsunami, Oil spills, Chemical leaks...)
- Regulatory, Accounting, Fraud, Reputation, Liquidity...



Integral Risk Management: All Quadrants





Levels: 3 Stages of Risk Management

1. Pre-conventional: Primal

- Emphasis on return
- Risk taking driven by gut instinct and emotions: subjective view of risk
- Actions and thinking dominated by principals
- Focused on pieces (positions), not the whole (portfolio)

2. Conventional: Rules Based

- Classification of risks (operational, market, credit, liquidity, etc.)
- Implementation of standardized risk measures
- Risk controlled with policies, procedures, and limits
- Hierarchical organization with clearly defined roles, including independent risk management function
- Focus on quantifying, controlling, and minimizing risk: objective view of risk

3. Post Conventional: Integral

- Proactive culture of risk management throughout the organization
- Constant engagement and discussion about risk
- Harness intelligence both within and outside the organization
- Risk viewed as both danger and opportunity
- Enterprise & portfolio perspective, not just position level
- Flex flow, constantly evolving and improving
- Blend of art and science: subjective + objective

Summary Recommendations



Risk needs to be managed at the enterprise level, not silos

Grow a pervasive risk management culture, and challenge all to identify and communicate potential risks & scenarios

Pay attention to early warning signs, qualitative and quantitative

Don't reduce risk management to just numbers. Keep in mind all quadrants: I, WE, IT, ITS

Questions?



www.riskmetrics.com

asia@riskmetrics.com

Tel. +65 6826 9333



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- **RiskMetrics** – a leading provider of quantitative risk management and portfolio analytics
- **ISS Governance Services** – a leading provider of corporate governance and proxy voting services
- **Financial Research & Analysis** – a leading provider of forensic accounting, legal and regulatory research



Addressing a Broad Spectrum of Risk

RiskMetrics Group views risk through a wide lens, enabling clients to make more informed decisions based upon multiple points of risk insight and a more complete risk management solution.

