

2005 Enterprise Risk Management Symposium

The Society of Actuaries, the Casualty Actuarial Society and
the Professional Risk Managers' International Association

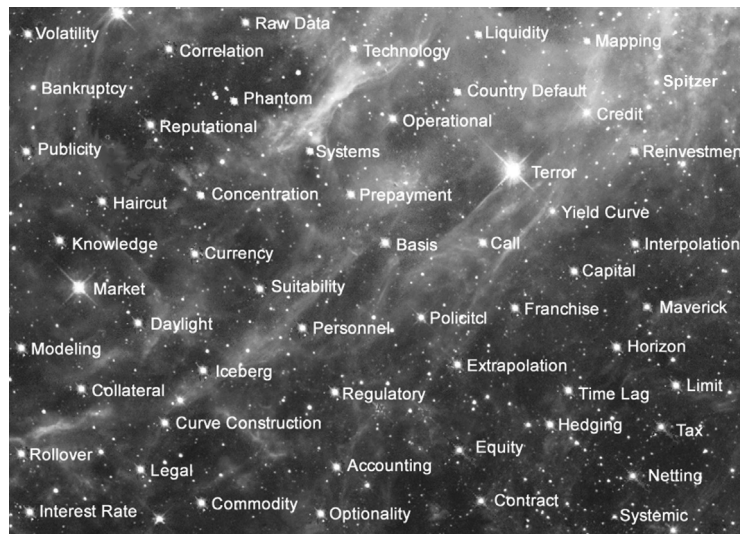
Current Thinking on Risk Management

May 2, 2005

Leslie Rahl
President
Phone: 212-404-6101
E-mail: leslie@cmra.com

Capital Markets Risk Advisors (CMRA) does not warrant the truth, accuracy, timeliness or completeness of any information or data provided herein. This presentation does not constitute investment advice nor does it constitute a solicitation, recommendation, inducement or invitation by CMRA or any other person to buy, sell or hold any security, financial product or financial service or otherwise engage in investment activity. All copyrights, database rights and other intellectual property rights relating to this presentation belong solely to CMRA and no portion of these materials may be transferred, transmitted, extracted, duplicated, sold, re-sold or circulated in whole or in part without CMRA's prior written consent. © ALL RIGHTS RESERVED

Galaxy of Risks



(Partial listing)

Common Risk Measures

- Aging
- Alpha
- Bank Tracking
- Benchmark Equivalents
- Beta
- Bucketed Sensitivity
- Concentration
- Convexity
- Correlation
- Country Exposure
- Coverage Ratios
- Credit Rating
- Current Risk Exposure
- Delta
- Devaluation Risk
- Dollar Face
- Duration
- DV01
- Effective Duration
- Extension Risk
- Factor Analysis
- Gamma
- Gap Analysis
- Likelihood of Default
- Loan to Valuation Ratio
- Mark to Market
- Mark to Model
- Option-Adjusted Spread
- Position Reports
- Potential Risk Exposure
- Prepayment Sensitivity
- Relative Value
- Rho
- Risk Rating
- Scenario Analysis
- Sensitivity
- Sharpe/Treynor Measures
- Shortfall Probability
- Simulation
- Spread Analysis
- Standard Deviation
- Stress Testing
- Theta
- VaR
- Vega

(Partial listing)

CMRA's Galaxy of Performance Measures

- Absolute Return
- Appraisal Ratio
- Cash Flow Adjusted Equity Market Index
- Cash on Cash Returns
- Downside Deviation
- Downside Risk
- Drawdown Risk
- Information Ratio
- Jensen's Measure
- Modigliani Ratio
- Risk of Ruin
- Semi-Variance
- Sharpe Ratio
- Sortino Ratio
- Target Deviation Shortfall Probability
- Time-Weighted Rate of Return
- Treynor's Measure
- Value-at-Risk
- Vintage Year's Comparison
- Benchmark Relative VaR
- Liquidity Adjusted VaR

Goals of Risk Control

- Know Your Risks
- Define Your Tolerances
- Minimize Uncompensated Risks
- Minimize Unanticipated Risks

Policy Issues

Where are you on this scale?

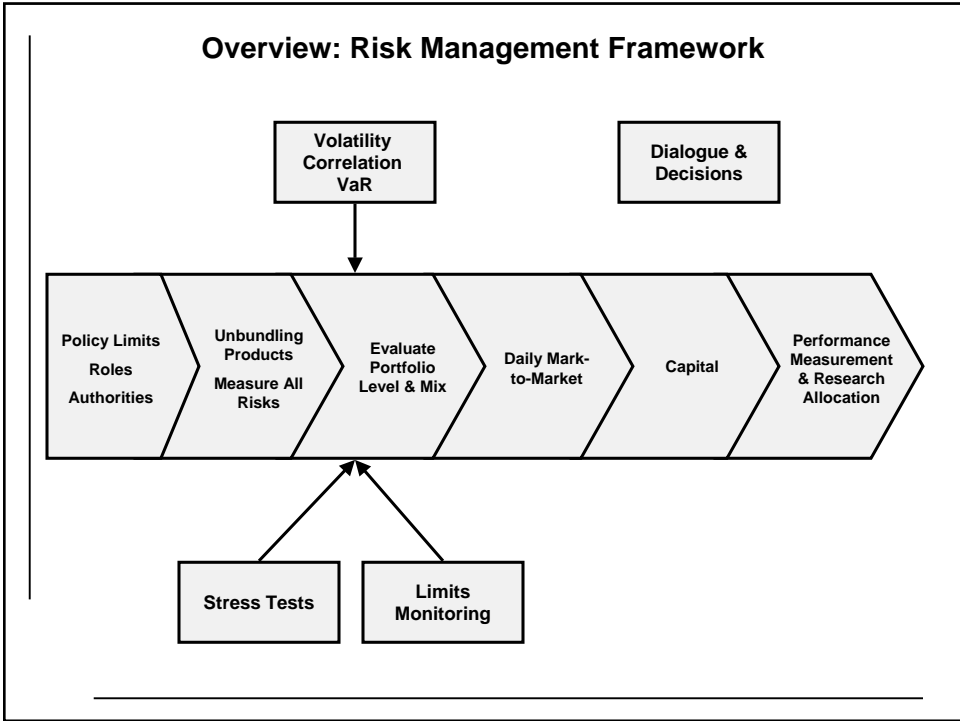
Informal

Formal



- Operate on trust “Do the right thing
- Rely on culture to control risk
- Often leaves room for “adverse innovation”

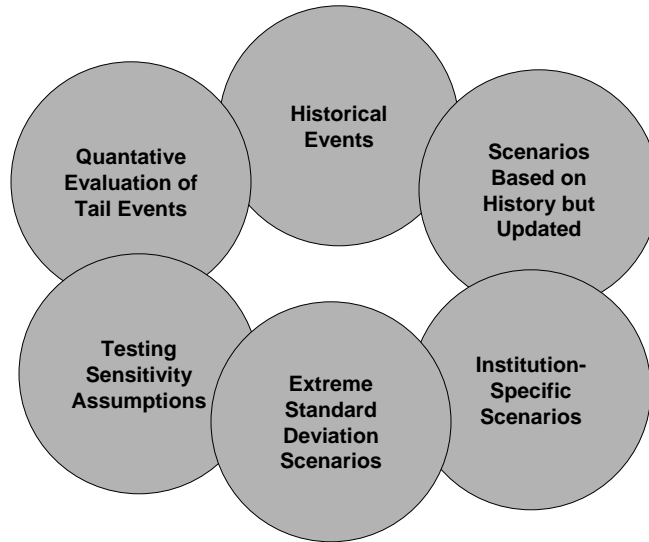
- “If it is not written here, don’t do it”
- Slows innovation and frustrates managers
- Often removes reward available at acceptable risk



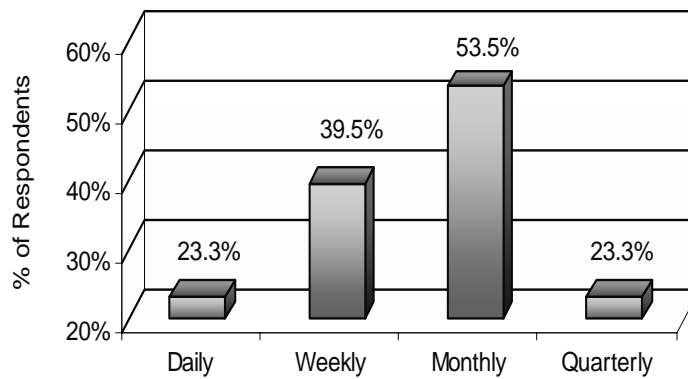
CAUTION

**VaR is Necessary
but
NOT Sufficient**

Stress Testing Approaches

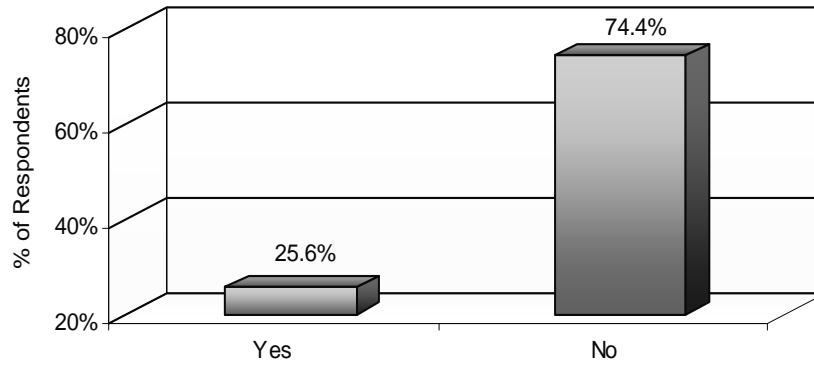


How Often are Firm-Wide Stress Test Results Presented to Senior Management?



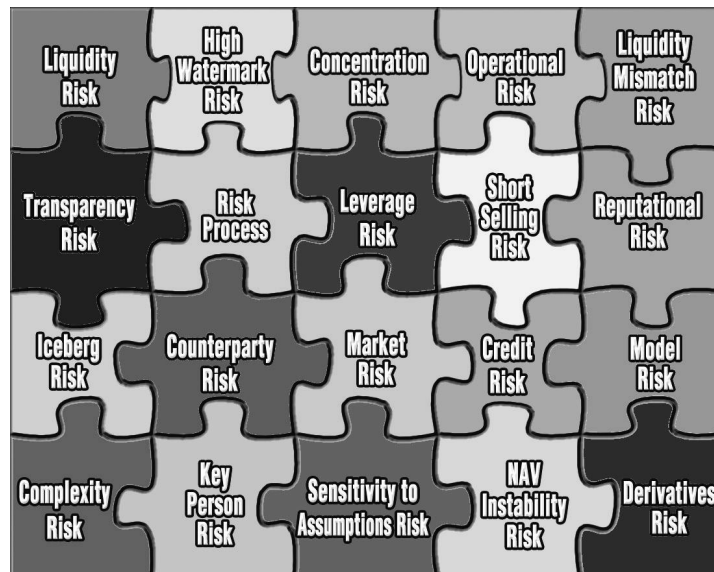
Source: Committee on the Global Financial System

Do Any of Your Stress Tests Allow for the Interaction of Market Risk and Counterparty Default Credit Risk?



Source: Committee on the Global Financial System

Risk Management



NAV/Fair Value Survey
Reliance on a Single Quote

	<u>% Willing to Rely on One Quote</u>
Traditional Money Managers	75.0
Hedge Funds	63.6
Mutual Funds	37.5

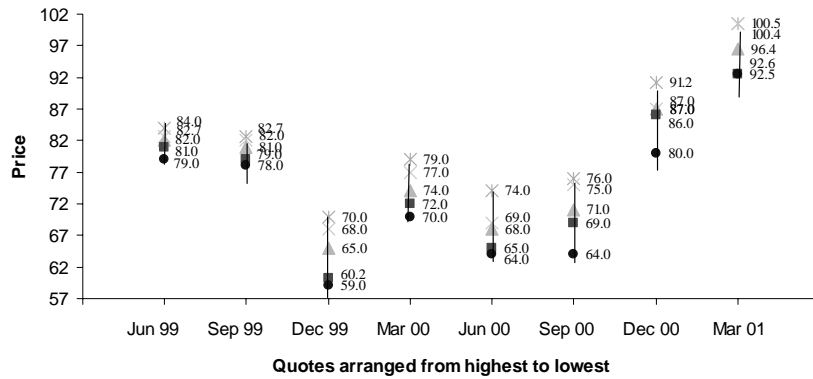
NAV/Fair Value Survey

■ **Definitions of “illiquid” vary across participants and include:**

- ◆ **>10% ownership**
- ◆ **Zero or one market maker**
- ◆ **No price change for five consecutive business days**
- ◆ **Cannot sell position in one week at 1/3 daily volume**
- ◆ **Not able to be sold at the current value, within seven days**

Asset Liquidity Affects Valuation Risk Time Series for Broker-Dealer Quotes on an MBS Derivative

Quotes Received June 1999 to March 2001 for FNR 99-15 SB



Source: Hedge Fund Transparency, Quantifying Valuation Biased for Illiquid Assets, RISK, June 2002

Returns Vary Based on Methodology Used

Quarterly Returns - 12/99 to 3/00

	Bid %	Mid %	Offer %
Highest	12.9	14.8	15.0
Lowest	18.6	21.0	12.5
Average	15.3	16.8	10.1
Drop high and low and average	15.1	16.3	7.5

Returns Vary Based on Mid vs. Bid/Offer

Quarterly Returns - 12/99 to 3/00

	Bid %	Mid %	Offer %
Highest	12.9	14.8	15.0
Lowest	18.6	21.0	12.5
Average	15.3	16.8	10.1
Drop high and low and average	15.1	16.3	7.5

Importance of Valuation

- Did the investor fairly pay/receive the correct amount for his or her investment/redemption?
- Are funds that employ similar strategies “comparable” or does the investor need to make mental adjustments made for impact of different methodologies?

Valuation Due Diligence Questions

- Do you have written valuation policies and procedures?
 - May I please see them?
 - Who marks the book to market?
 - In what percentage of your portfolio does the manager come up with his/her own marks?
 - Who reviews the marks?
 - Who has authority to override?
 - Who receives override reports?
 - Since you trade in multiple time zones, how do you calculate your NAV?
-

Valuation Due Diligence Questions (Cont'd)

- What percentage of your portfolio is marked to model?
 - Under what circumstances does the fund adjust a quoted price?
 - How do you account for the lack of liquidity in your valuations?
 - Do you haircut the price where the holding is large compared to daily volumes?
 - How do you deal with correlation assumptions?
 - Do you mark longs to the bid and shorts to the offer? Everything at midpoint? Other?
 - How many data sources do you use?
 - Do you vary volatility by maturity? By strike?
-

Valuation Due Diligence Questions (Cont'd)

- If the fund uses an average of multiple sources/quotes, what is the general range between the minimum and the maximum? What is the largest spread you can remember?
- If the fund does not use an “average”, what is the method for arriving at its marks?
- What controls does the fund have in place to avoid or mitigate potential conflicts of interest relating to valuation?
- How does the fund use ex-post information to evaluate their pricing?
- What assumptions does the firm use when market quotes are not available? Who develops these assumptions?

Valuation Due Diligence Questions (Cont'd)

- What process does the fund use to resolve disagreements between the traders and others with regard to pricing?
- Does the fund's prime broker separately mark the portfolio? If so, how do the broker and firm reconcile differences, if any?
- Does the fund have a threshold at which it investigates off-market transactions? If so, does the fund have a threshold at which it discloses to stakeholders off-market transactions?
- Does the fund have a valuation committee or designated people who perform the functions of a valuation committee?

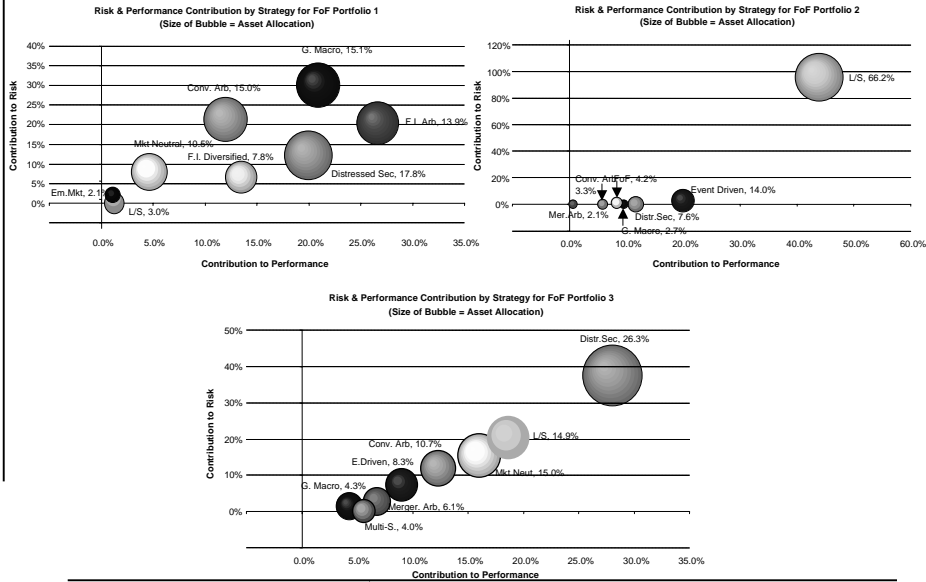
Ten Valuation Principles

- 1) Valuations should be determined consistently and in good faith
- 2) A firm should disclose its valuation policy and process to all investors
- 3) Valuations should conform to the firm's valuation policy and process
- 4) Valuations should be verifiable
- 5) Unless a change is beneficial with regard to accuracy, valuation methods should be applied consistently from period to period

Ten Valuation Principles (cont'd)

- 6) Material changes in valuation methods should be communicated to appropriate stakeholders
- 7) A market price is the basic reference for building valuations, and actual (traded) prices are the best indicators of the market price
- 8) Liquidity issues and transaction costs mitigate the law of one price
- 9) Fair price is the amount at which two consenting parties agree to transact at arm's length
- 10) All prices are not created equally (e.g., large block vs. odd lot, and two or more different dealers)

Aggregate Risk / Return Contribution of the FoF Portfolios by Strategy and Asset Allocation for the 3Q02-3Q03 Period

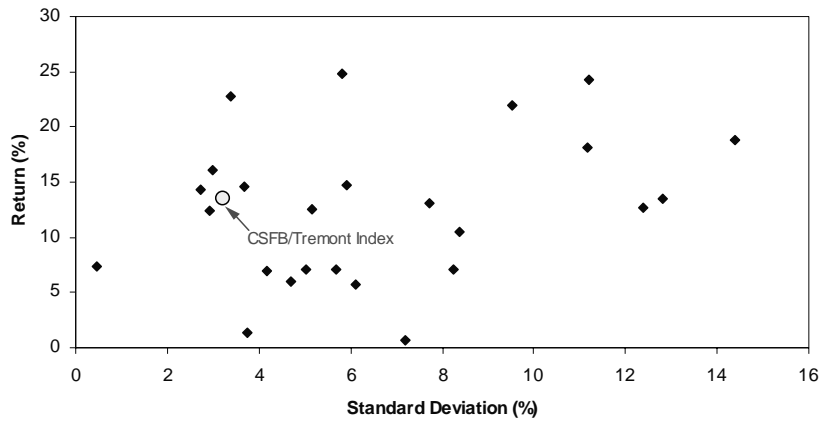


Comparisons of Market Neutral Indices Across Different Sources

	1997 to 2001					Return	Sharpe Ratio
	1997	1998	1999	2000	2001		
CSFB/Tremont	14.8	13.3	15.3	15.0	9.3	13.5	2.6
HFR	13.6	8.3	7.1	14.6	6.4	10.0	1.3
Hennessee	12.3	5.1	(0.8)	7.1	6.1	5.9	0.3
Tuna	19.2	11.8	19.6	17.4	7.3	3.0	0.6
Maximum Difference	6.9	8.2	20.4	10.3	3.2	10.5	2.3
Average	15.0	9.6	10.3	13.5	7.3	8.1	1.2

Source: Tuna, HFR, CSFB/Tremont, Hennessee

CSFB/Tremont Market Neutral Index vs. Individual Managers



Source: CSFB/Tremont, Altvest, CMRA Analysis is based on 26 funds included in the CSFB/Tremont Index

Adding hedge funds to a 60/40 USD Portfolio

- If we assume an 8.6% return, a 6% standard deviation*, and a 20% maximum constraint on a hedge fund allocation, a classical optimization would allocate 12% to hedge funds.
- If we used a 26.5% return (1999 actual) and the same other assumptions, the allocation would go to 20%.
- If we used a (5.1%) return (1998 actual) and the same other assumptions, the allocation would be 0%.

* 1995-2004 HFRI FoF Composite