

# **Enterprise Risk Management Leveraging the Regulatory Base**

**Max J. Rudolph, FSA CFA CERA  
Rudolph Financial Consulting, LLC  
April 13, 2008**

**Based on article in The Actuary  
April/May 2007**

# Definition

- Enterprise Risk Management
  - Casualty Actuarial Society, 2003
- “ERM is the **process** by which organizations in all industries assess, control, **exploit**, finance, and monitor risks from **all** sources for the purpose of increasing the organization’s short and long term **value** to its stakeholders.”

# Enterprise Risk Management (ERM) Key Points

- Get paid for the risks you take
- Best solutions are unique to your company!
- Best way to do this?
  - Use common sense
  - Variety of metrics
  - Use models but be skeptical

# ERM Focus

- Financial Risk
  - Focus on exposures and value
  - What ifs
  - Involve planning dept
  - Optimize results
- Operational Risk
  - Focus on controls and solvency
  - What could happen
  - Run by Internal Audit
    - COSO
  - Limit downside

# Financial Risk Management Failures

- 1973: Equity Funding Fraud**
- 1983: Baldwin United Shell Game**
- 1984: Continental Illinois Bank Run**
- 1986: The ZZZ Best Carpet Scandal.**
- 1988: Equitable (NY) GIC losses.**
- 1989: The US S&L Crisis.**
- 1991: Salomon Brothers Bond Scandal.**
- 1991: BCCI Scandal.**
- 1991: Executive Life / First Capital Life Junked**
- 1991: Mutual Benefit Liquidity Squeeze**
- 1991 – 1996: Lloyd’s Asbestos Liabilities**
- 1994 – 2002: Japanese Real Estate & Banking**
- 1994: Orange County Default**
- 1994: Kidder Peabody Fiasco.**
- 1994: Confederation Life Failure**
- 1994: Monarch Life Seizure**
- 1995: The Barings Derivatives Scandal.**
- 1996: Sumitomo Copper Scandal.**
- 1997: The Natwest Hole.**
- 1997: The Bre-X Mining Scandal.**
- 1997: Smith Barney Investor Fraud.**
- 1997: Bank of Tokyo-Mitsubishi Derivatives Loss.**
- 1997: UBS Derivatives Model Problems.**
- 1997: Prudential Insurance US Market Conduct**
- 1997: Nissan Mutual ALM Failure**
- 1998: Griffin Trading Bond Futures losses.**
- 1998: Russian Bond Debacle.**
- 1998: The LTCM Risk Model Failure.**
- 1998: Asian Economic Flu Crisis**
- 1999: Toho Mutual & Daihyaju Mutual**
- 1999: General American Liquidity Failure**
- 1999: Korea Life ALM Losses & Failure**
- 1999: Unicover Fiasco**
- 2000: Equitable UK Pension guarantees**
- 2001: American Express CBO Losses**
- 2001: World Trade Center**
- 2002: Enron & Worldcom**
- 2002: Consecoco chokes on Green Tree**
- 2002: HIH Surprise**
- 2002: Amer Skandia VA problems**
- 2003: Parmalat Accounting Scandal**
- 2003: Allmerica VA reserving**
- 2003: Annuity & Life Re Overgrowth**
- 2004: Marsh Contingent Commissions**
- 2005: AIG Finite Re**
- 2006: Scottish Re Tax Asset**
- 2006: Hurricane Katrina**
- 2007: Bear Stearns/Countrywide/??? Sub Primes**

# Current Case Studies

## Perfect Storms?

- Soc Gen
- Subprime
- Private Equity
- Common themes
  - Liquidity
  - Leverage
- What's next?
  - Recession?
  - Commercial Mortgages?

# Extreme Risks?

- Casualty
  - Earthquake/Volcano
  - Hurricane/Tornado/Flood
- Terrorism
  - Anthrax in Chicago – the Windy City
  - Trains in Chicago – crossroads of America
  - New York City – water
  - Political assassinations

# Objectives of Risk Management

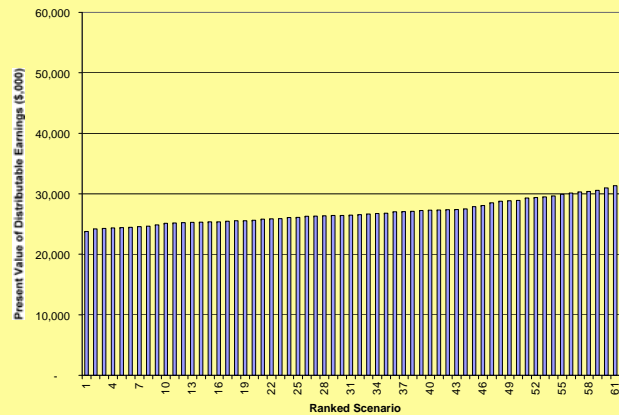
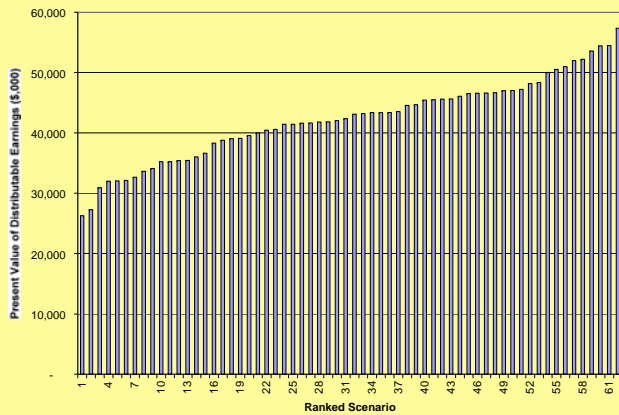
- Value added
- Knowledge
- Culture
- Compliance



# Culture

- Starts at the top and builds momentum
  - Alignment
  - Integrity – walk the walk
- Transparent/Proactive
- Minimal cost

# Risk/Return Profile





# Value Added

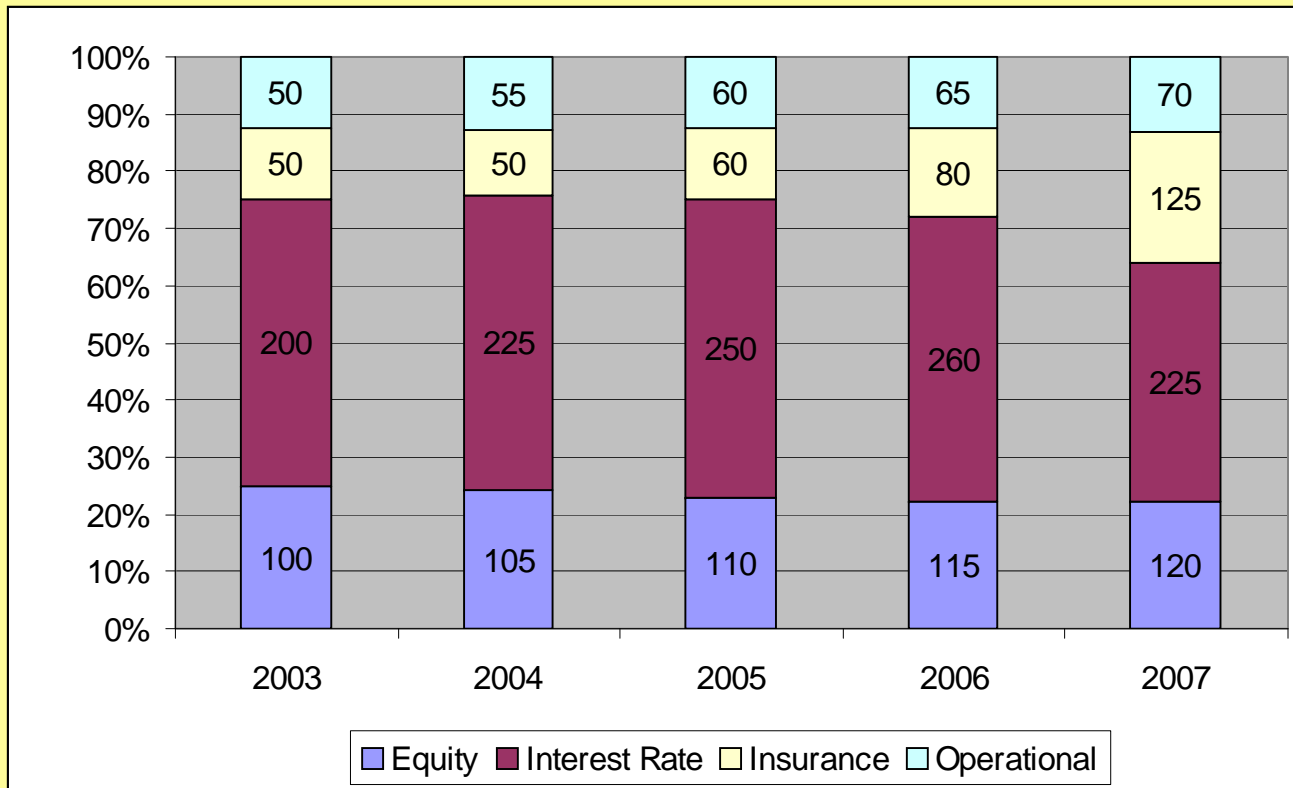
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- Financial services firms focus on balance sheet risks
  - manage across silos
    - Capital
    - Liquidity
    - Asset/Liability Management (interest rate risk)
    - Risk aggregation

# Counterparties

- Can't transfer risk, can only share it
- Weapons of mass destruction?
- Shadow banking system?
  - No guarantees so less/no regulation
- Reinsurers - transparency

# Risk-Based Capital Trend



# Risk Committee

- Key product officers from across the company
  - Aids succession planning by providing cross training
  - Builds team that is used to working together
- Chance for other experts to review in advance
  - Avoids some major mistakes
  - Checks and balances
  - Pricing discipline
  - Business units buy in
- Risks debated before accepted
  - Proactive

# Stochastic Models

- Economic Capital
- Assumes major risks are independent
  - Diversification benefit
- Assumes correlation is constant
  - Copulas may get us past this constraint
- Assumes model risk is minimal
  - Limited data points
  - Complexity

# Principles-Based Approaches

- Dependent on modeling
  - Generally uses recent history to drive correlations
- Assumes correlation is constant
  - Copulas may get us past this constraint
  - Ongoing research
- Peer review is key
  - Model risk is minimal
  - Limited data points
  - Complexity
  - Defend and document



# Principles-Based Approaches and Enterprise Risk Management

- ...Use the same tools
- ...Leverage existing models
- ...Iterative improvements
- ...Use stochastic results (sort/graph)
  - Pick a level of conservatism
    - Conditional Tail Expectation (CTE/TVaR)
- ...Are built off cash flows
- ...Allow firms to choose risks to exploit

# Deterministic Scenarios

- Scenario Planning
  - Worried about specific event
    - What if once per century hurricane or pandemic
  - Modeling constraint
    - I don't know how to do it
  - Time constraint
    - I can't do it based on lengthy run time

# Scenario – Pandemic Event Risk

- Tail risk/Catastrophic risk
- Example – Influenza pandemic
  - 25% morbidity, 0.6% mortality in OECD
- Risk to life insurer
  - Business continuity
  - Claims
  - Liquidity (assets down/claims up)
  - Counterparty (reinsurer solvency at risk)

# Practical Uses

- Marginal impact
  - Organic growth
  - Project (aging) current A/L portfolio
  - Introduce new product
  - Reinsurance (with and without)
  - Investment strategy
  - Acquisition

# Thank you!

Max J. Rudolph, FSA CFA CERA  
Rudolph Financial Consulting, LLC  
max.rudolph@rudolphfinancialconsulting.com  
(402) 895-0829

[www.rudolphfinancialconsulting.com](http://www.rudolphfinancialconsulting.com)