

Risk Management in the Insurance Industry

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Panelists

Moderator:

Andrea M. Sweeny, FCAS, MAAA
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Presenters:

P & C - Jerry Miccolis, FCAS, MAAA
Tillinghast - Towers Perrin
Health - Donna Novak, ASA, MAAA
MMC
Life - Dave Sandberg, FSA, MAAA
Allianz Life

Overview

- Outline some framework for assessing insurance company risk in an organized way
- Provide some concrete examples/models for risk management for:
 - specific risks
 - use in day to day company decision making
 - integrated insurance company risk

Overview (continued)

- Look at risk management structures in the light of the 9/11 and subsequent terrorist events
- Outline some of the stresses/impediments in designing a good risk management process
- Summarize some recent insurance industry findings
- Highlight area of research and sources for more information

We Hope You Will Take Away

- A sense of the structure of an insurance company risk management process
- An understanding of the importance of an integrated program
- An indication of the volume and kinds of research being done and of how to tap the work that has been completed to date

Risk Management Practices in the Property/Casualty Industry

Jerry Miccolis, FCAS, MAAA
Tillinghast - Towers Perrin



What We'll Cover

- Some thought-provoking case studies
 - Company #1: Risk management as business model
 - Company #2: A new Chief Risk Officer's agenda
 - Company #3: Enterprise Risk Management -- a unifying framework
- ERM -- the Casualty Actuarial Society view
- Closing thoughts -- risk management in the wake of September 11

Company #1: Risk Management As Business Model

- Property catastrophe reinsurer
- The objective is to optimally leverage capital
- The focus is on *underwriting* risk
 - Includes asset risk and insurance risk
 - Does not include strategic risk, operational risk
- The model
 - Start with world-class natural catastrophe modeling and economic scenario generation modeling
 - Simulate overall "probability of profit" distribution for the enterprise

Company #1: Risk Management As Business Model

- The model (cont'd)
 - Determine risk tolerance -- and therefore required capital
 - Evaluate each deal based on its impact on the overall profitability distribution
 - How much incremental capital would the deal cost?
 - Does the expected return on this required capital justify its acquisition?
 - Every manager and underwriter is trained on the model and uses it in the course of their work

Company #2: A New Chief Risk Officer's Agenda

- Global property/casualty company
- Charge: Design a conceptual framework, language and tool set to incorporate consideration of risk into strategic decision-making
- Laying the foundation
 - Metrics -- internal and external alignment
 - Risk identification -- top-down based on business relevance
 - Operational planning -- "stochasticize" the drivers
 - Investment risk management -- alignment with above

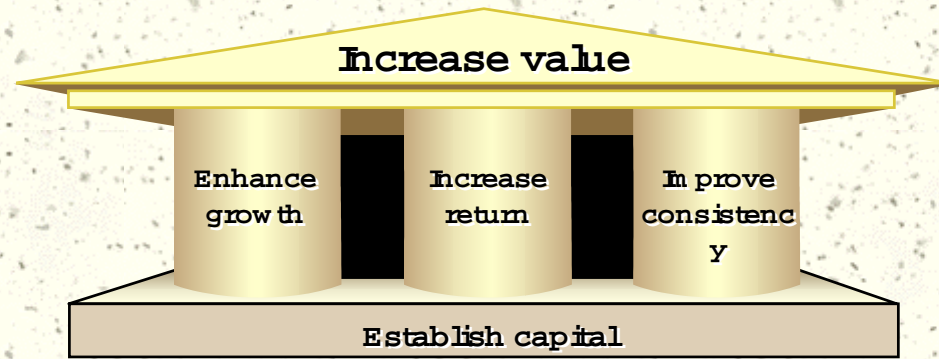
Company #2: A New Chief Risk Officer's Agenda

- Building on the foundation
 - Catastrophe monitoring -- portfolio approach
 - Strategic planning -- using risk-based language
 - New initiatives -- risk-based evaluation criteria
- Related activities
 - Business continuity
 - Internal audit
 - Regulatory compliance

Company #3: ERM -- A Unifying Framework

- Regional property/casualty company
- Build structural simulation model of insurance and non-insurance operations to inform strategic decision-making
- Comprehensive, integrated approach
 - Risk assessment
 - Capital adequacy
 - Capital allocation
 - Asset allocation
 - Reinsurance strategy

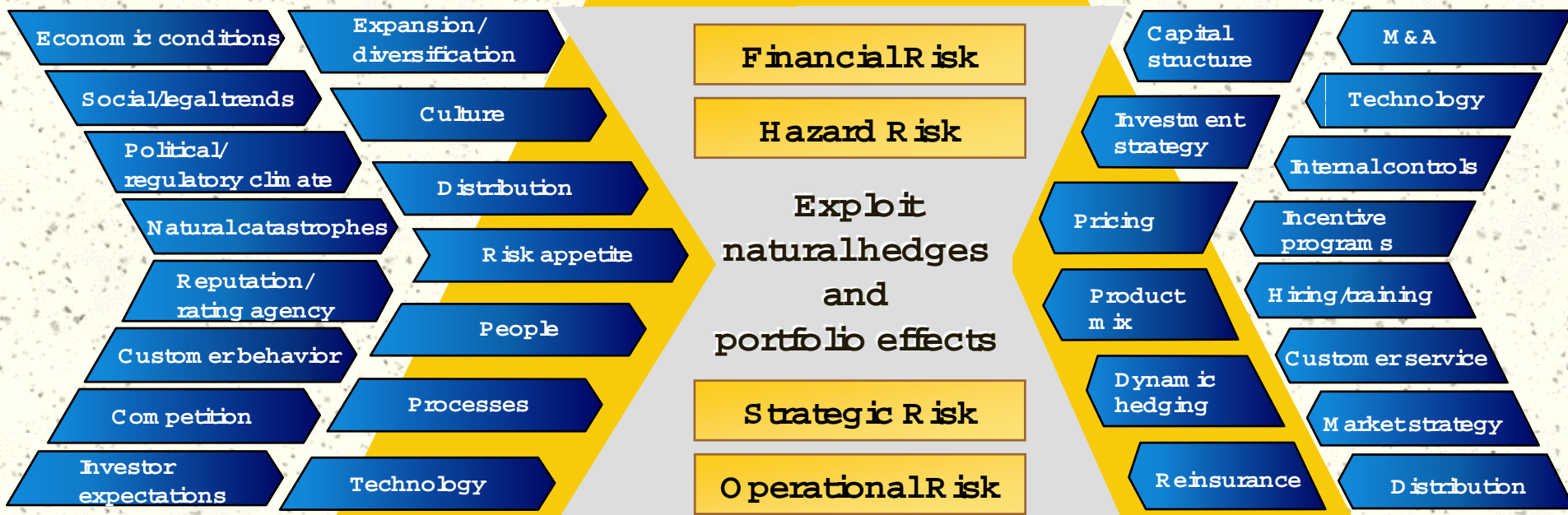
ERM--A Unifying Framework



Understand both internal and external environments

Holistically manage all risks

Investigate both financial and operational strategies



ERM -- The Casualty Actuarial Society View

- **Definition**

"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"

- **Framework**

- Risk type
- Risk management process step

ERM -- The Casualty Actuarial Society View

Risk Type	Risk Management Process Step						
	Establish Context	Identify Risks	Analyze/Quantify Risks	Integrate Risks	Assess/Prioritize Risks	Treat/Exploit Risks	Monitor and Review
Strategic							
Operational							
Financial							
Hazard							

Closing Thoughts -- Risk Management in the Wake of September 11

- Exposure management
- Extreme event risk planning
- Disaster response
- Capital management
- Stakeholder relations

Additional Reference Material

- Casualty Actuarial Society: ERM bibliography
- *Enterprise Risk Management in the Insurance Industry* -- Tillinghast 2000 Benchmarking Survey Report
- *Creating Value Through Enterprise Risk Management: A Practical Guide for the Insurance Industry* -- Tillinghast monograph, July 2001
- *September 11, 2001: Implications for the Insurance Industry* -- Tillinghast white paper, September 2001
- "ERM and September 11" -- International Risk Management Institute article, November 2001

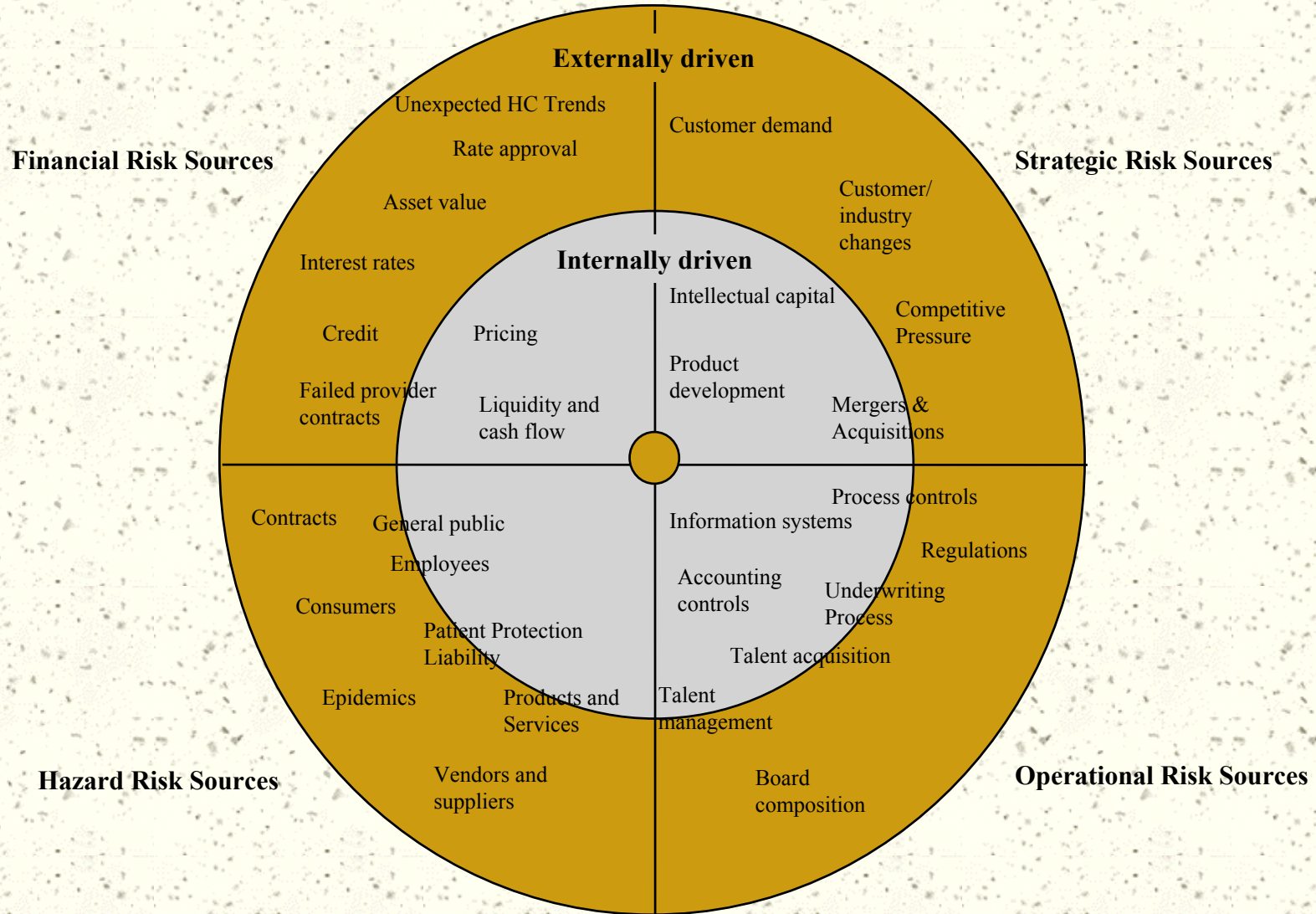
Risk Management Practices in the Health Industry

Donna Novak, ASA,
MAAA

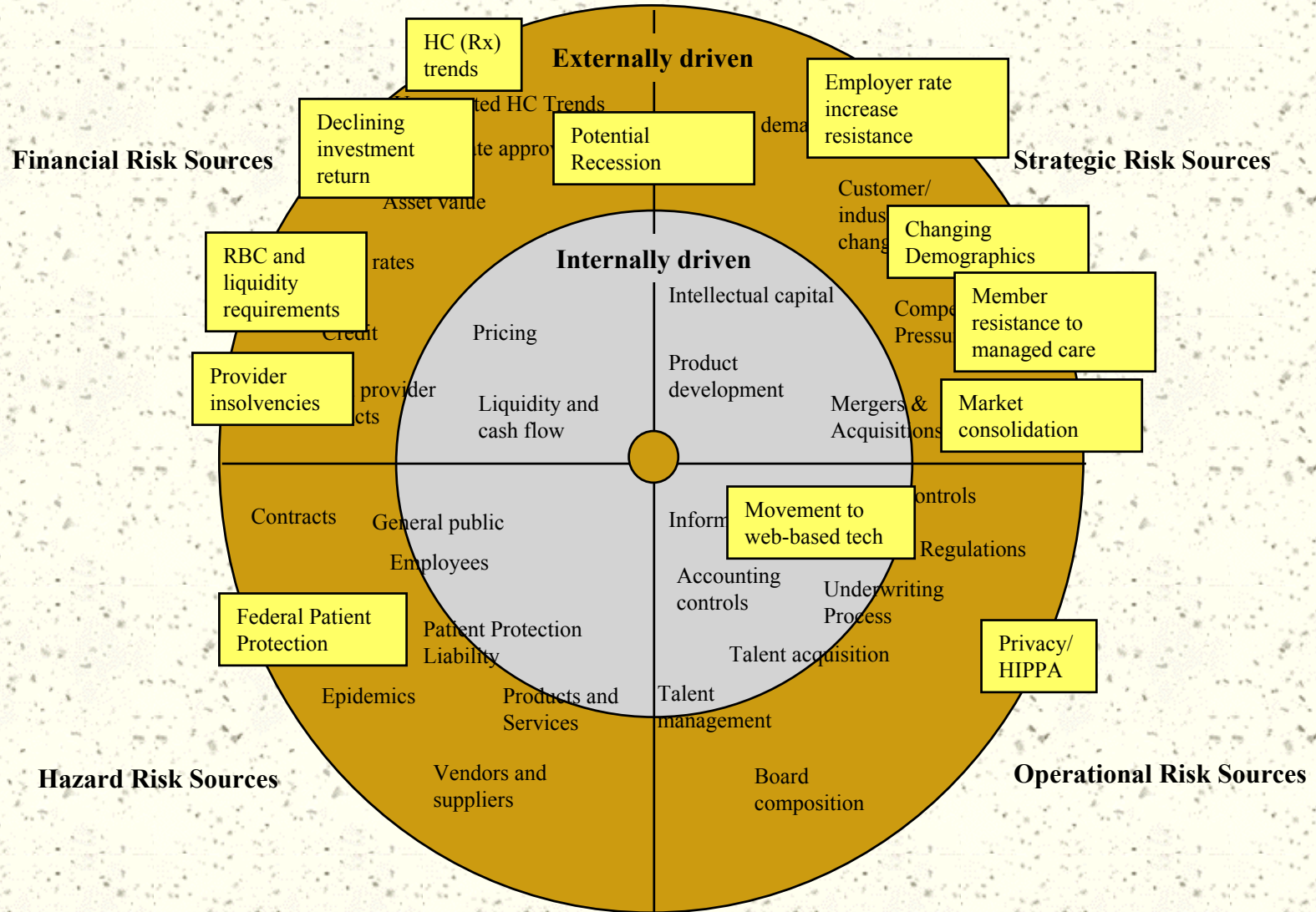
MMC, Enterprise Risk



MMC ENTERPRISE RISK: Illustrative Risk Sources



MMC ENTERPRISE RISK: Current Risk Sources



How Can Companies Manage Underwriting Risk?

- Diversification of Products
- Underwriting to Select Better Risks
- Transfer Risk
 - Provider Contracts
 - Groups Retain More Risk
 - Individuals Retain More Risk through Higher Deductibles, Coinsurance, and Copay
 - Transfer through Reinsurance
- Have Sufficient Capital to Absorb Losses

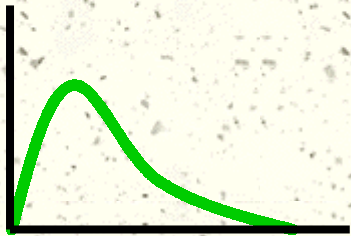
How Much Capital Do We Need?

- NAIC Risk-Based Capital
- Business Model

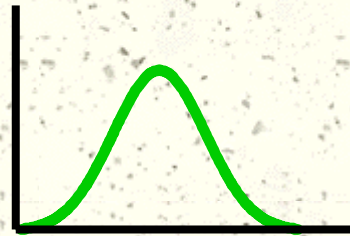
Business Model Approach

- Loss Ratio etc. Variability Analysis
- DFA/UVS
 - Stochastic Modeling of Gain and Loss (G&L) Over a Period of Time
- Underwriting Cycle Analysis

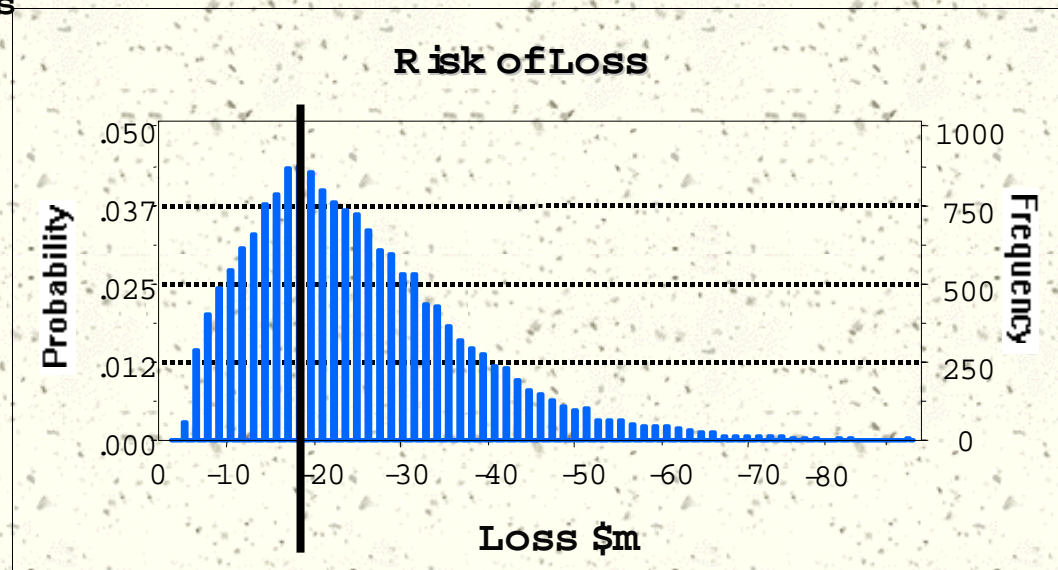
Model the Impact of Each Risk



Provider Insolvencies



Rx Trends



Capital Sufficiency

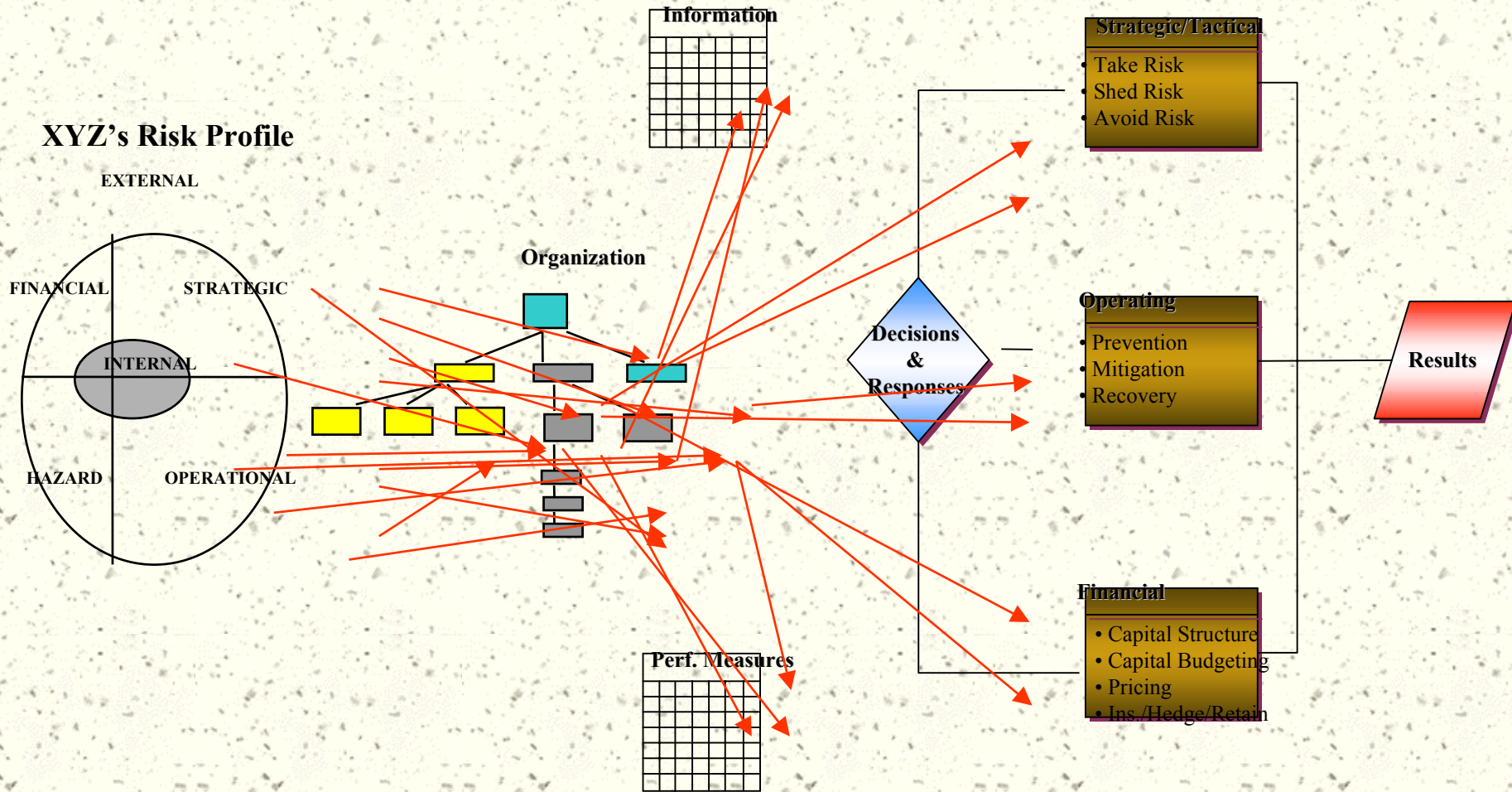
- Blue Cross Blue Shield Plans
- Multi-state Companies in Multiple States with RBC Requirements
- Single-State Companies with RBC Requirements
- Single-State Companies without RBC Requirements
 - NAIC filing of RBC
 - No NAIC filing

Risk Management Practices in the Life Industry

Dave Sandberg, FSA, MAAA
Allianz Life



The GOAL: Convert This

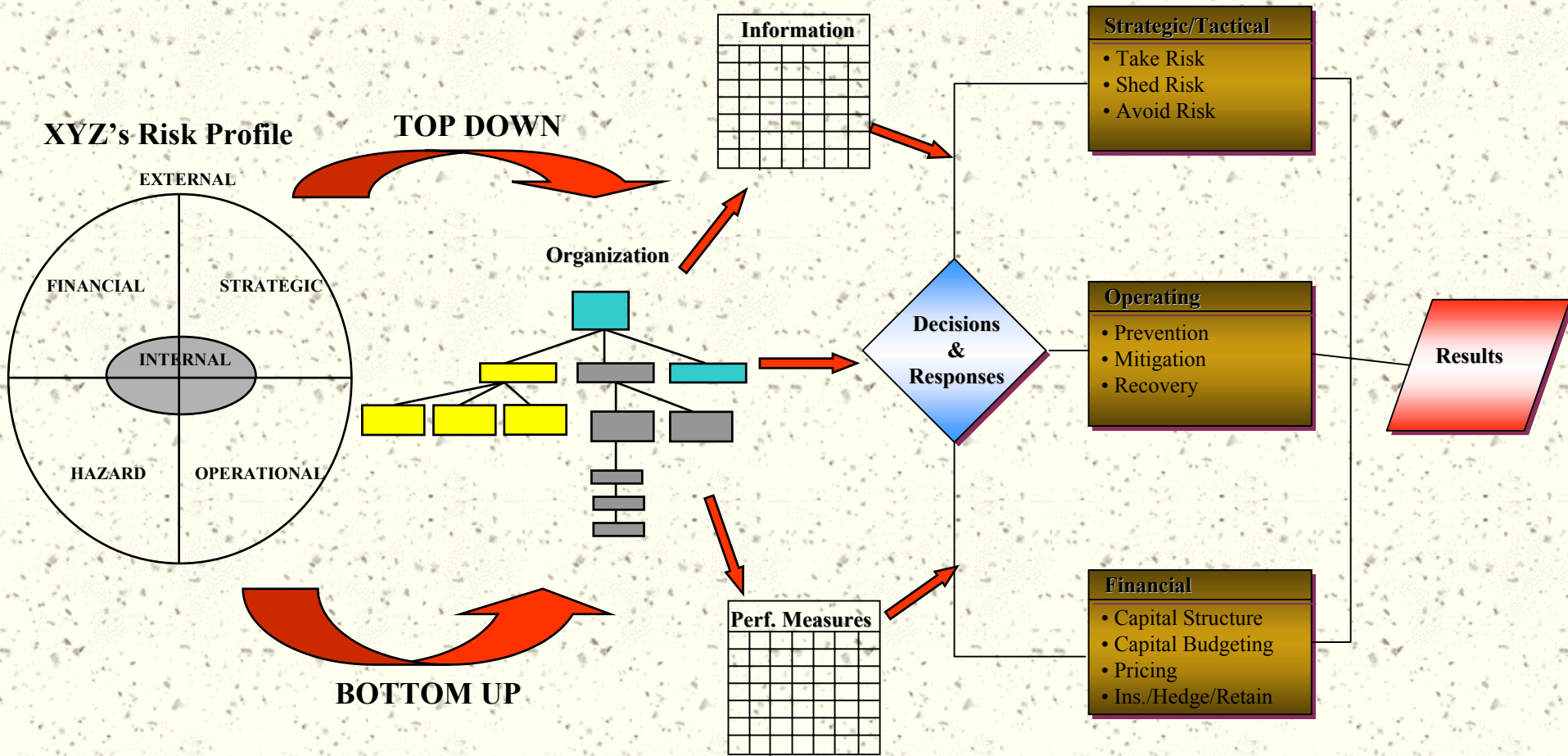


Who manages what risk and how do they relate?

What information and performance measures are used to make decisions?

How are decisions made?

Into an Enhanced Risk Management System



Diverse Audiences

- 1. Policyholders (Mutuals)
- 2. Regulators - State & Possibly Federal & Banking
- 3. Shareholders (Public Disclosure Only)
- 4. Private Investor
- 5. Foreign Investor, Publicly Traded or Regulated Requirements
- 6. US Owner, Publicly Traded, Not Insurance
- 7. Rating agency
- 8. Self Insured Company
- 9. Internal Management

Diverse Language of Risk Measurement

- 1. Formula Based
 - » NAIC Life Risk Categories of C1-C4
 - » NAIC P&C Risk Categories of R1-R7
- 2. Silo Based (Banking View) - Credit, Liquidity, Market, Legal, OR, Reputational
- 3. SOA Survey - Assets, Liabilities, A/L, OR, Enterprise
- 4. Time Horizon - VaR vs. EV
- 5. Economic Capital - RAROC

Mixture of Owners and Regulators Leads to Diverse Scorecards

- 1. NAIC RBC Formulas - Meant only to flag weak companies. Not meant to evaluate or rank a “good” company to others or to itself over time
- 2. Federal Reserve - Credit, Liquidity, Market, Legal, OR, Reputational
- 3. Life Appointed Actuary - Main Focus is on Interest Rate Risk
- 4. Foreign Owners - RAROC & Economic Capital
- 5. Current GAAP Earnings & ROE
- 6. Sales Growth & Assets Under Management

For the Following Diverse Managers of Co. Risk

- 1. Appointed Actuary
- 2. Pricing Actuary
- 3. Chief Actuary
- 4. Chief Underwriter
- 5. Chief Financial Officer
- 6. Chief Marketing Officer
- 7. Chief Risk Officer (If Present)
- 8. Internal Audit
- 9. Board of Directors
- 10. Regulator

Integrated Regulatory Classification Schemes

- **Canada - Office of the Superintendent of Financial Institutions**
 - § Credit
 - § Market
 - § Insurance
 - § Operational
 - § Liquidity
 - § Legal And Regulatory
 - § Strategic
- **Sweden - Finansinspektionen**
 - § Credit Risks
 - § Market Risks
 - § Underwriting Risks (Insurance)
 - § Reinsurance Risks (Insurance)

More Integrated Regulatory Classification Schemes

- **Sweden - Continued**
 - § Reserving Risks (Insurance)
 - § ALM-Risks (Insurance)
 - § Solvency Risks (Insurance)
 - § Operational Risks

- **UK - Financial Services Authority**
 - § Credit
 - § Market
 - § Operational
 - § Insurance
 - § Group

Understanding The Current Landscape - The Good, The Bad & The Ugly

- *A. SOA Finance Practice Survey in 1999 - State of risk position reporting in insurance industry in North America*
- *B. SOA Risk Management Task Force*
- *C. 2000 Tillinghast survey*
- *D. 2001 MMC Survey*
- *E. 2001 M&R Survey*
- *F. NAIC/Federal Reserve Risk Classification Project*
- *G. IAA Solvency Working Party - In Progress*

SOA Finance Practice Survey in 1999 - State of risk position reporting in insurance industry in North America = Measurement & Monitoring, not Management

Objective

Develop a better understanding of industry practices in risk position reporting (RPR)

Coverage

types and depth of RPRs

turnaround time and frequency of RPRs

who typically receives RPRs

what do these reports typically encompass

the efficiency (accuracy/ease of collection) of the data collected for these reports

how the industry believes these reports will change and evolve

Survey Results

Asset R P R s

Duration

Convexity

The Greeks

Value at Risk

Liquidity

Performance Measure / Attribution

Liability R P R s

Experience Studies

Embedded Value and Variance Analysis

Asset/liability R P R s

Deterministic & Stochastic Scenario Testing

Mismatch Risk (e.g. duration, convexity, liquidity)

Transfer Pricing

Operational R P R s

Empirical Evaluation

Regression Analysis

Influence Diagrams and the Delphi Method

RESULTS BEING COMMUNICATED VIA:

- Article submitted to the NAAJ
- Complete results posted to the SOA website with a covering index (flyer in The Actuary)
- Magazine articles in Contingencies, Risks & Rewards and Best's Review

Questions of Interest to SOA Risk Management Task Force - To Both Educate & Further Research

- 1. RBC covariance and correlation
- 2. Policyholder behavior in extreme situations
- 3. Extreme value models
- 4. Modeling techniques relating to adequacy of scenarios to be tested
- 5. Risk management & Shareholder value
- 6. Pricing for risk
- 7. Equity risk quantification

2000 Tillinghast Survey "Enterprise Risk Management in the Insurance Industry: 2000 Benchmarking Survey Report

Results from 66 insurance industry chief financial officers, chief actuaries and chief risk officers in major markets worldwide

Geography: 60% North America, 40% rest of world

Company structure: stock, mutual, other

Type of operations: life insurance, property/casualty insurance, mutual funds, banking

Company size: \$25 million to \$10 billion in direct written premiums

For the European ALM survey, results from 46 life insurance companies in 7 countries

Supplemented with in-depth interviews/company visits

Tillinghast Key findings

- Very few companies have a chief risk officer (CRO), although the position is much more prevalent outside of North America
- Companies recognize the importance of integrating risk into their company's strategic, operational and financial planning, but not all do so because of:
 - Tools
 - Organizational turf
 - Processes
 - Time
- Most companies include operational risk in the internal audit plan, but far fewer include financial risk

Continued . . .

Other key findings - Tillinghast

- Less than half of respondents are factoring interactions among risk sources into their:
 - Assessment/measurement of risks
 - Determination of diversification benefit
 - Mitigation/financing strategies
- There is a high level of dissatisfaction with respect to:
 - Stochastically modeling the important risks
 - Including operational risk in determining economic capital
 - Prioritizing disparate risks using a common metric
 - Optimizing financial and operational strategies in light of risk/reward requirements
 - Coordinating all these activities within a coherent framework

MMC EIU Study - Key Findings

- **ERM is being adopted widely:** 41% of companies are implementing ERM (53% in Europe, 34% in North America, 33% in Asia)
- **Companies using ERM are more confident in their ability to manage risk:** Of those using ERM, 90% reported being very confident, compared with just 45% of those not using ERM
- **Firms adopt ERM for a wide range of reasons**
- **Companies believe ERM can improve their P/E ratio and cost of capital:** 84% of companies reported a link between ERM and these metrics
- **Executives believe that communicating their ERM activities to investors can be beneficial:** 50% of respondents at public companies say they have much to gain by advertising their efforts to the investment community
- **Non-traditional risks pose the greatest threat:** Top three were customer loyalty, competitive threats and operational failure

EIU Study - Key Findings

- ERM requires structural and cultural change
- Few companies measure the integrated effects of risk across the entire organization: Only 15% of companies aggregate risks across their organization. Many have started with financial risks. Integration will spread to operational risks next.
- Current quantification methods are inadequate for intangible risks: 53% report this as an obstacle to ERM.
- There is no single approach to ERM

MMC EIU Study - ERM, why now?

- Outsiders are pushing companies to manage risk more comprehensively and systematically
- Investors are becoming more sensitive to any deviation from earnings estimates, encouraging companies to address earnings volatility
- Shareholders are increasingly holding boards of directors and senior executives to higher accountability standards
- The continuing convergence of the traditional capital and insurance markets is yielding innovative approaches to managing emerging risks
- Many companies perceive a rise in the number and severity of the risks they face

What are companies hoping to get from ERM?



Source: EIU survey 2001

What are regulators hoping to get from ERM?

?

Moving on to Management of Risk

- **A. Risk Reduction** - Reduce Sales, Stricter U/Wing, Redesign Product(Sept 11),Improve Operating Practices(Claim Infor/causes),training
- **B. Risk Integration** - ALM - Manage risk by buying assets to match liability to acceptable risk tolerance level - + Buy reinsurance
- **C. Risk Diversification** - Multiple Product Lines, Broader geographic area
- **D. Risk Hedging**- Natural or introduce counterparty risk
- **E. Risk Transfer** - Sell, Securitize, Reinsure to reduce volatility
- **F. Risk Disclosure** -???? To be Continued

Risk Disclosure

- A. One of Three Proposed Pillars in Basel 2 for Banks
- B. Nature of Disclosure is Unclear - Three sample approaches
 - 1. Public via 10K/Q. Would overwhelm reader with assumptions
 - 2. Regulator via confidential process (banking)
 - 3. Prospective looking balance sheet with public disclosure of actual to expected variances (Schedule H & O in Blue Book)
- C. Life Insurance is only Balance sheet where 99% of the reserves (the major liability risk item) include no indication of what the company actually believes about the listed future obligations other than that they are adequate.

Risk Management in the Insurance Industry

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