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The Actuaries' Role in Non-Life Risk Management Issues



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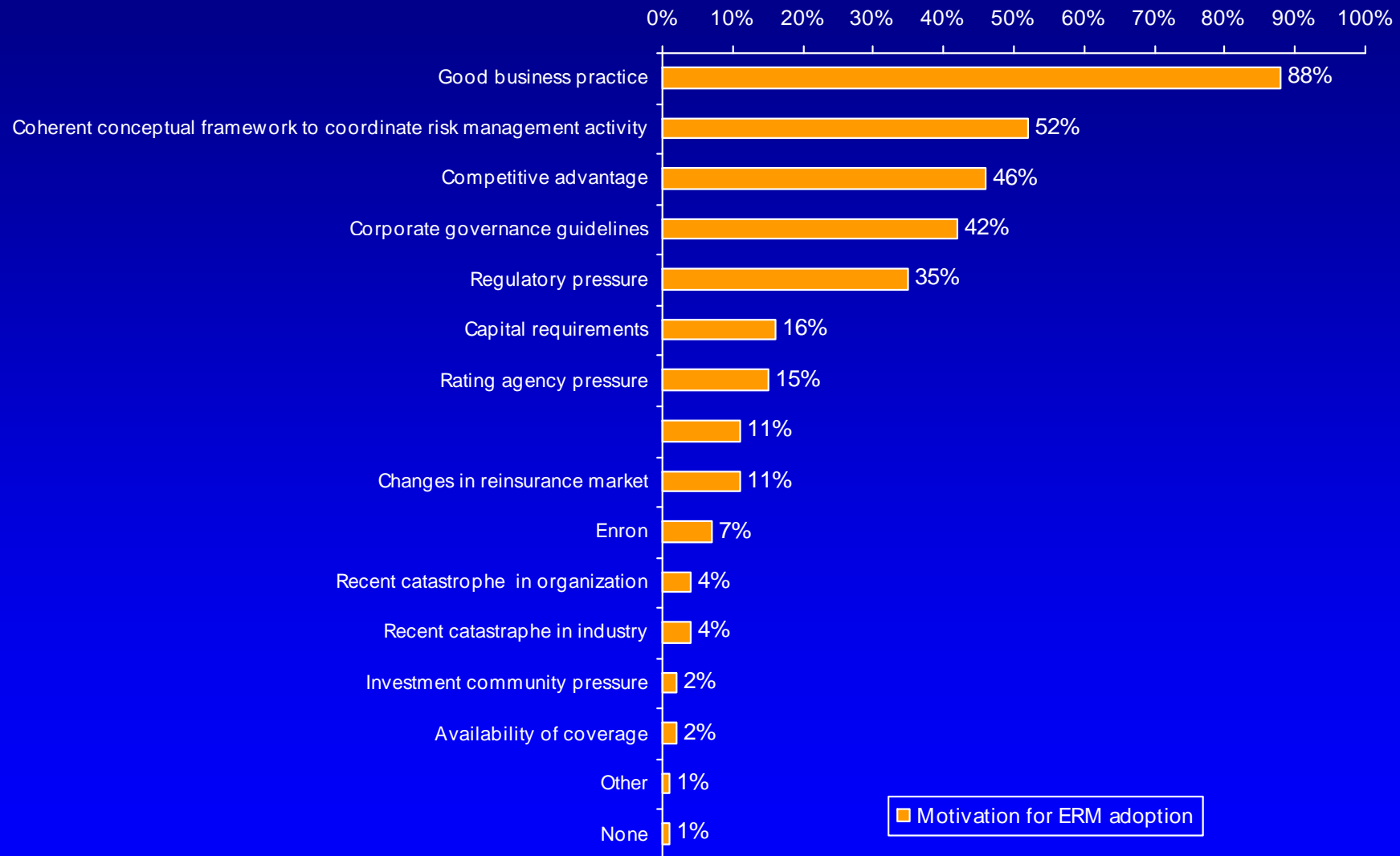
Today's Topics

- Greetings from the CAS
- Risk management in the “non-life” arena: the emergence of enterprise risk management (ERM)
- The relevance of the actuary to the “ERM movement”
- Some live examples

What's driving the ERM movement?

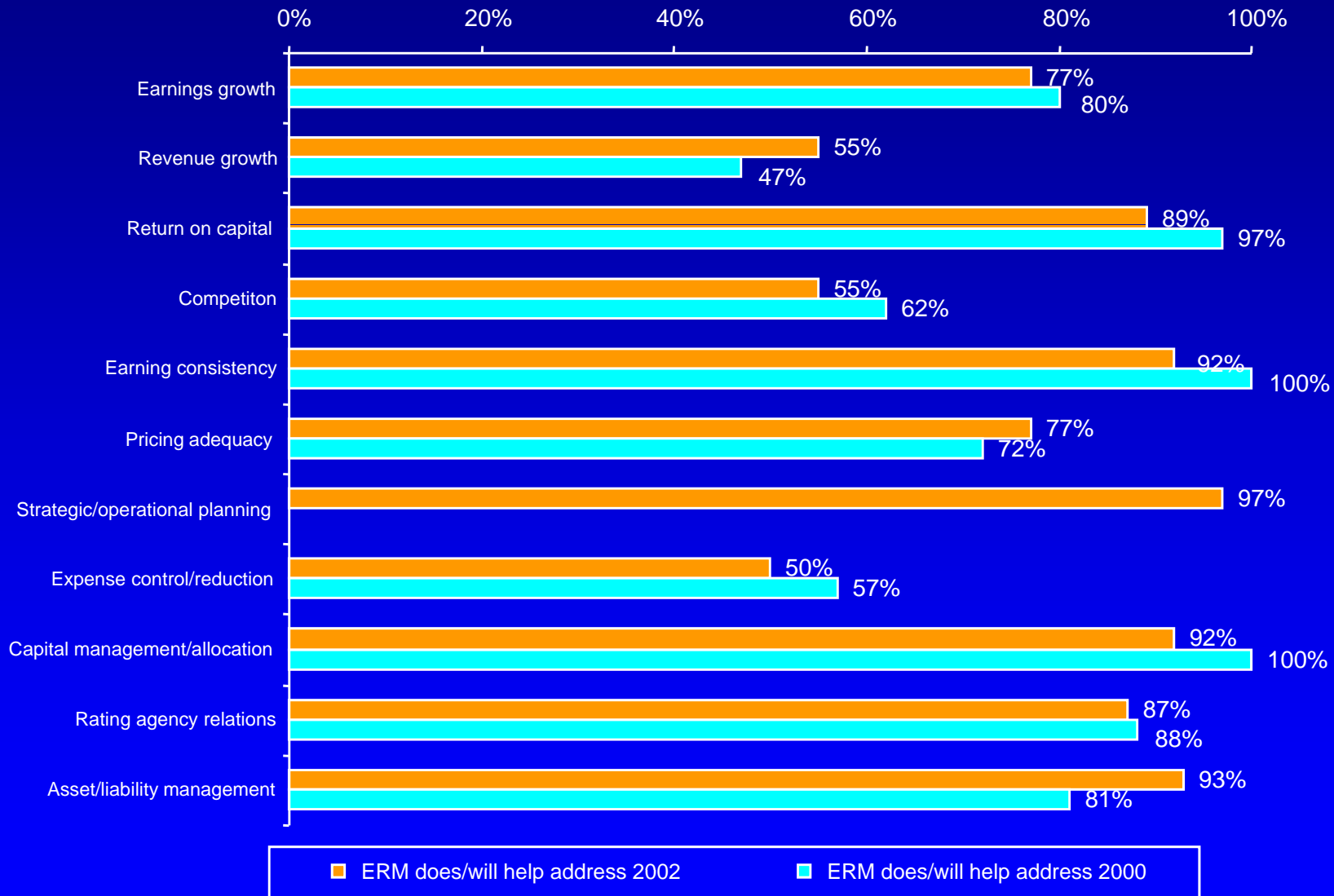
- From the outside:
 - Well-publicized calamities/investor concern
 - Corporate governance guidelines
 - Regulatory oversight/rating agency activity
- From the inside:
 - “Beating the odds”/disciplined, profit-producing risk-taking
 - Risk/reward optimization
 - Risk preparedness/“risk aware” culture
 - Competitive advantage

Reasons insurers adopt ERM



Source: Tillinghast *Enterprise Risk Management in the Insurance Industry -- 2002 Benchmarking Survey Report*

Insurers believe ERM helps address their top business issues



Source: Tillinghast *Enterprise Risk Management in the Insurance Industry -- 2002 Benchmarking Survey Report*

CAS Actions Regarding ERM

- Recent History (1998-2000)
 - CAS Board Task Force on “non-traditional practice areas”
 - Executive Council actions
- CAS ERM Advisory Committee (2000/1)
 - CAS Research Priorities
 - CAS Education Priorities
- CAS ERM Research Committee (2002-)
 - Current Imperatives/Activities

CAS Advisory Committee on ERM: Charge

- Identify ERM research and education needs
- Recommend methods, priorities, timetables to satisfy needs
- Monitor efforts of existing committees
- Recommend additional efforts by existing or new committees
- Use broad definition of ERM in its work

CAS Advisory Committee on ERM: Specific Goals

- Define ERM
- Develop conceptual framework
- Outline desired knowledge level
- Determine current knowledge level
- Specify learning objectives
- Identify research needs to close gaps
- Identify education needs to close gaps
- Recommend methods, priorities, timetable, industry focus

CAS Advisory Committee on ERM: Specific Goals (cont'd)

- Compile initial ERM bibliography
- Identify implications of ERM on CAS policy and standards
- Recommend additional efforts of existing/new CAS committees to further CAS research and education
- Recommend efforts to increase CAS visibility on ERM

ERM Definition for CAS Purposes

- *“The discipline by which an organization (in any industry) assesses, controls, exploits, finances and monitors risk from all sources for the purpose of increasing the organization’s short- and long-term value to its stakeholders”*
- Key elements:
 - Dual nature of risk
 - Value creation
 - CAS relevance beyond insurance industry

ERM Conceptual Framework: Two Dimensions

Risk Type

- Strategic
- Operational
- Financial
- Hazard

Risk Management Process Step

- Establish context
- Identify risks
- Analyze/quantify risks
- Integrate risks
- Assess/prioritize risks
- Treat/exploit risks
- Monitor and review

Strategic Risks

- Competition
- Customer wants
- Demographic and social/cultural trends
- Technological innovation
- Capital availability
- Regulatory and political trends

Operational Risks

- Business operations (product development, capacity, efficiency)
- Empowerment (leadership, change readiness)
- Information technology (relevance, availability)
- Integrity (management fraud, reputation)
- Information/business reporting (budgeting and planning, accounting information)

Financial Risks

- Price (asset value, interest rate, foreign exchange, commodity)
- Liquidity (cash flow, call risk, opportunity cost)
- Credit (default, downgrade)
- Inflation/purchasing power
- Hedging/basis risk

Hazard Risks

- Liability claims
- Fire and other property damage
- Windstorm and other natural perils
- Theft and other crime
- Personal injury, disease, disability
- Business interruption

Risk Management Process Steps

- Establish context
 - External (environment, stakeholder relations)
 - Internal (objectives, governance, performance criteria)
 - Risk management (coverage, coordination)
- Identify risks
 - Conditions/events
 - Threats/opportunities
- Analyze/quantify risks
 - Risk calibration
 - Probability distributions

Risk Management Process Steps (cont'd)

- Integrate risks
 - Aggregate risk distributions, reflecting correlations
 - Express results in terms of key performance criteria (aggregate risk profile)
- Assess/prioritize risks
 - Marginal contribution to aggregate risk profile
- Treat/exploit risks
 - Develop strategies
- Monitor and review
 - Risk environment/strategy performance


ERM Framework Grid

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							

Gap Analysis

- Identify the role of the actuary
- Determine the current level of ERM knowledge
- Determine the source of knowledge
- Determine the desired level of knowledge
- Where and to what degree is the shortfall?

Gap Analysis

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							

Gap Analysis Approaches

- Review syllabus and committee plans
- Review continuing education and future plans
- Review other relevant surveys
 - CAS non-traditional practice area survey
 - CAS CEO survey
 - Tillinghast ERM Benchmarking surveys

Gap Analysis Approaches (cont'd)

- Discussions with other professional organizations
 - RIMS
 - GARP
 - IAFE
 - AIMR
 - SOA
- Advisory Committee discussions
- CAS membership survey -- April 2001

Gap Analysis -- Key Results

- Figures in the following table represent % of membership survey respondents who believe it is important for all CAS members to know about, or be expert in, the various elements of the ERM framework by 2005
- Highlighted figures represent areas of the greatest *gap* between this desired level and current level of knowledge

Gap Analysis -- Key Results

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	72%	54%	54%	69%	51%	44%	61%
Operational		53%	51%		46%	41%	
Financial		79%	81%		73%	64%	
Hazard		89%	91%		85%	75%	

Recommendations -- Research

- Highest priority topics
 - ERM overview
 - Value creation through ERM
 - Risk quantification (financial, operational, strategic)
 - Risk correlation & integration
- Remaining topics
 - Risk tolerances, risk/reward metrics, portfolio optimization, monitoring, treatment, integrated products

Recommendations -- Research (cont'd)

- Form standing ERM Research Committee
 - Direct & monitor research per above
 - Expand, update, organize, maintain ERM bibliography
 - Work with other CAS committees to coordinate ERM research and provide content for education
 - Partner with other organizations
 - Develop internal and external communications, designate spokespersons

Recommendations -- Education

- Codified 2005 CAS ERM education needs
 - For each element of ERM framework
 - By degree of desired knowledge level
 - By type of education vehicle
 - (see next page)
- Developed detailed Learning Objectives for each element of ERM framework
- Publish ERM bibliography
- Accomplish through existing committees

Recommendations -- Education (cont'd)

- For exam syllabus treatment (in varying degrees):
 - ERM overview
 - Analysis/quantification of all risk types
 - Risk integration
 - Establishing context
 - Assessing/prioritizing/treating/exploiting hazard & financial risks
- For continuing education treatment:
 - Topics above & other elements of framework

ERM Research Committee -- Current Imperatives

- ERM Overview document
 - Associate-level exam material
 - Contents:
 - Reasons/motivations for ERM
 - ERM definition/framework
 - Language/terminology/metrics/models/tools
 - Applications/case studies
 - Practical considerations in implementation
 - Bibliography

ERM Research Committee -- Current Imperatives (cont'd)

- Financial risk quantification
 - Literature review: wealth of existing material
 - Publish road map/reviews
- Value creation through ERM
 - Literature review: no useful material available
 - Non-insurance industry
 - Original research needed
 - RFP to professionals, practitioners, academics
 - Co-sponsored by RIMS
 - Insurance industry
 - Case study documentation

ERM Research Committee -- Current Imperatives (cont'd)

- Risk correlation/concentration/integration
 - Literature review: limited material available
 - Call for papers
 - Coordinate with DFA committee
- ERM bibliography
 - Abstracts
 - Organization
 - Maintenance

ERM Research Committee -- Current Imperatives (cont'd)

- Coordination with other CAS committees
 - DFA: joint meetings, joint call for papers
 - VFIC: joint research project
 - Syllabus/Ed Policy/Continuing Ed/SIS/etc.
 - RCMS
- Coordination with other professions
 - GARP
 - AIMR
 - RIMS
 - Academia
 - SOA, etc.

What are companies actually doing with ERM?

- Specialty reinsurer
 - Uses ERM model as business model
 - Evaluates each contract on basis of marginal contribution to enterprise risk profile
- Life insurer
 - ERM unit identified LOB of potential acquisition that would destroy value on risk/return basis
 - Carved out LOB; salvaged acquisition

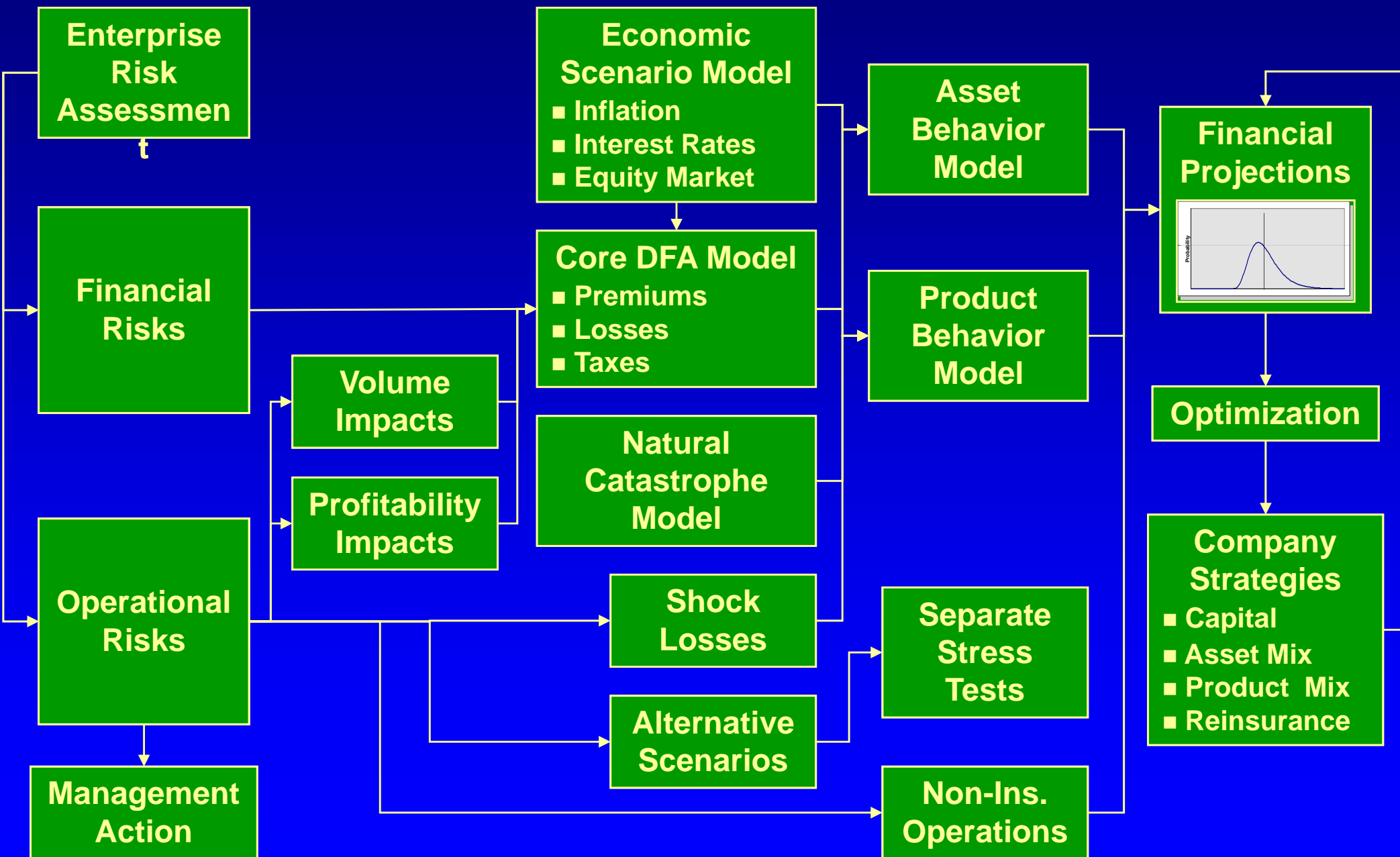
What are companies actually doing with ERM? (cont'd)

- Pharmaceutical company
 - Used ERM approach to build “real options” structural simulation model for R&D
 - Uses ERM language to facilitate interdepartmental decision-making
- Regional electric utility
 - ERM unit builds probability distributions around key drivers of strategic and operational plans
 - Plans are evaluated by Board based on informed downside risk considerations

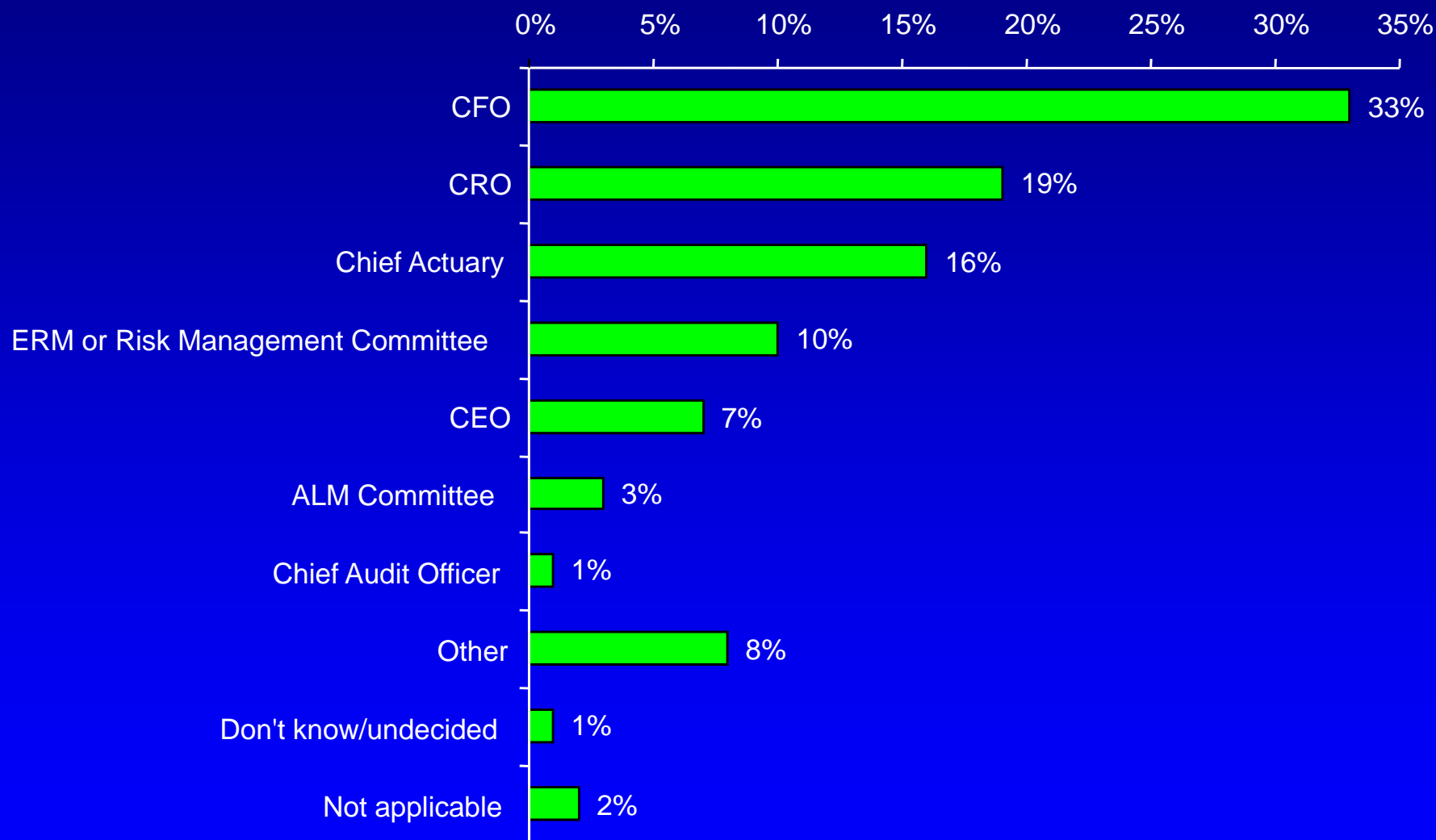
What are companies actually doing with ERM?

- Regional property/casualty carrier
 - Enterprise risk assessment
 - Financial and operational risk modeling
 - Capital requirements (reflecting countercyclicality of service businesses)
 - Capital attribution to business segments
 - Risk-adjusted performance measurement by segment
 - Investment strategy
 - Reinsurance strategy

One company's ERM approach



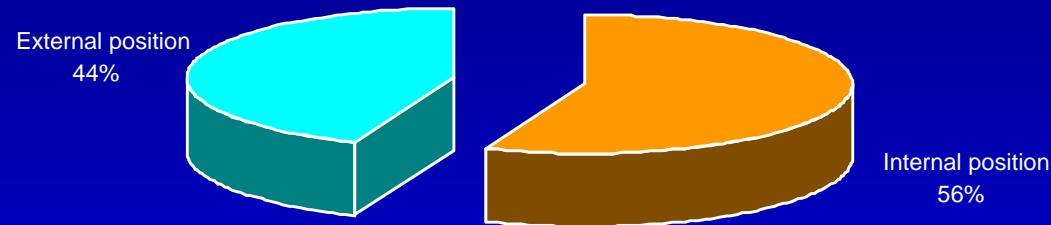
Who is responsible for ERM within an insurance company?



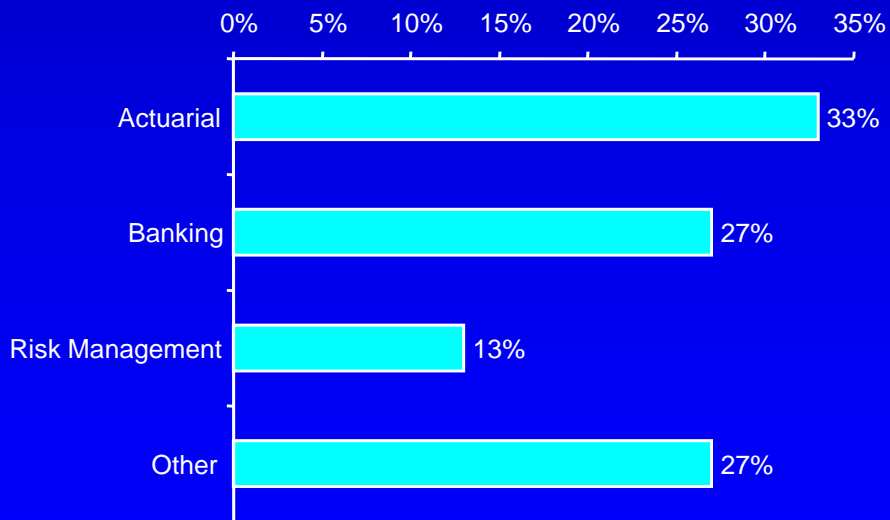
Source: Tillinghast *Enterprise Risk Management in the Insurance Industry -- 2002 Benchmarking Survey Report*

Where are the CROs coming from?

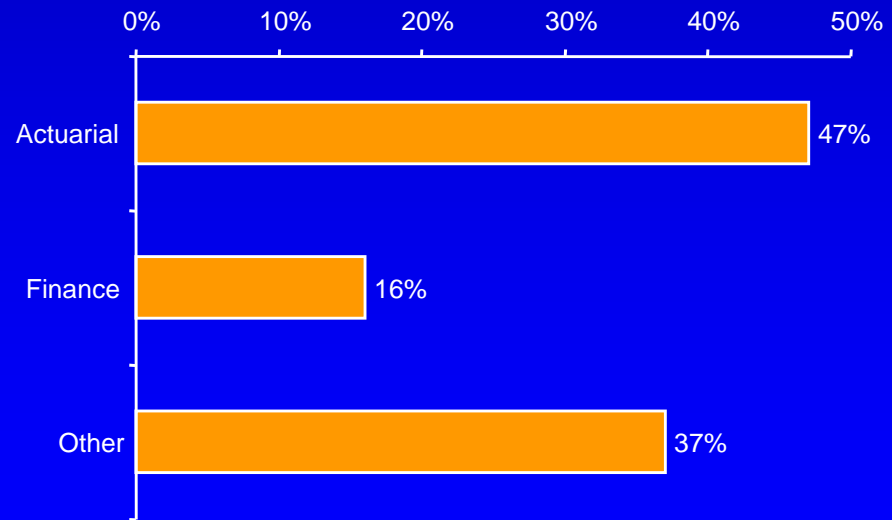
CRO came from:



External source CRO came from



Internal position CRO came from



Source: Tillinghast *Enterprise Risk Management in the Insurance Industry -- 2002 Benchmarking Survey Report*

ERM as Unifying Framework

- Actuarial subject areas
 - Pricing
 - Reserving
 - Risk modeling
 - Accounting
 - Financial performance measurement
 - Capital management
 - Asset/liability management
 - Reinsurance
 - Portfolio management
- Logical structure/integrated whole/
business-relevant
- Cross-silo Chief Risk Officer training

ERM as Actuarial Recruitment Tool

- Strong business focus
- Engagement of CAS candidates and recent Fellows/Associates
- Coordination with AIMR (CFA), GARP (FRM), et al
- The membership wants to go there
 - ERM Committees oversubscription
 - ERM survey response
 - ERM seminar attendance/response

For more information:

- On CAS ERM activities
 - www.casact.org
- On ERM Benchmarking Surveys
 - www.tillinghast.com
- On ERM generally
 - www.IRMI.com