Risk is Opportunity:

A Global ERM Brand

Harry Panjer, PhD, FSA, FCIA, HonFIA, CERA
Professor Emeritus, University of Waterloo, Canada
Visiting Professor, University of Michigan, USA

Definition of ERM

"ERM is the discipline by which an organization in any industry assesses, controls, exploits, finances and monitors risks from all sources for the purpose of increasing the organization's short- and long-term value to its stakeholders"

(Casualty Actuarial Society)

Some Key Elements

ERM is an ongoing process that involves

1. Identification – to identify hazards
2. Measurement – to assess risk exposure
3. Management – to achieve objectives
4. Value creation – through meeting firm objectives

These parallel what insurers have always done for assumed risk –

1. underwrite,
2. price and reserve,
3. reinsure,
4. Profit

But the knowledge base is both broader and deeper.

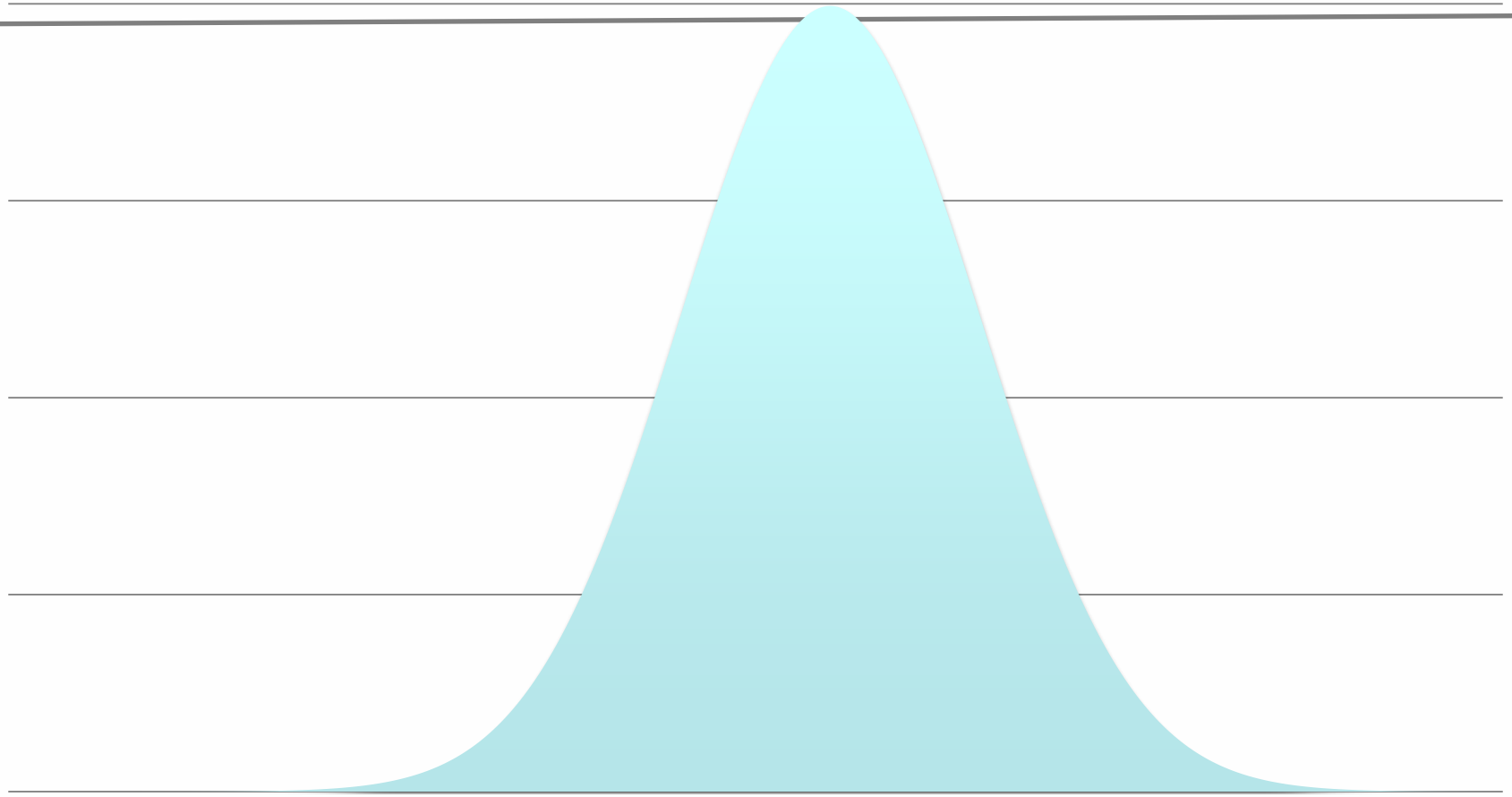
Enterprise Risk Management for Financial Institutions

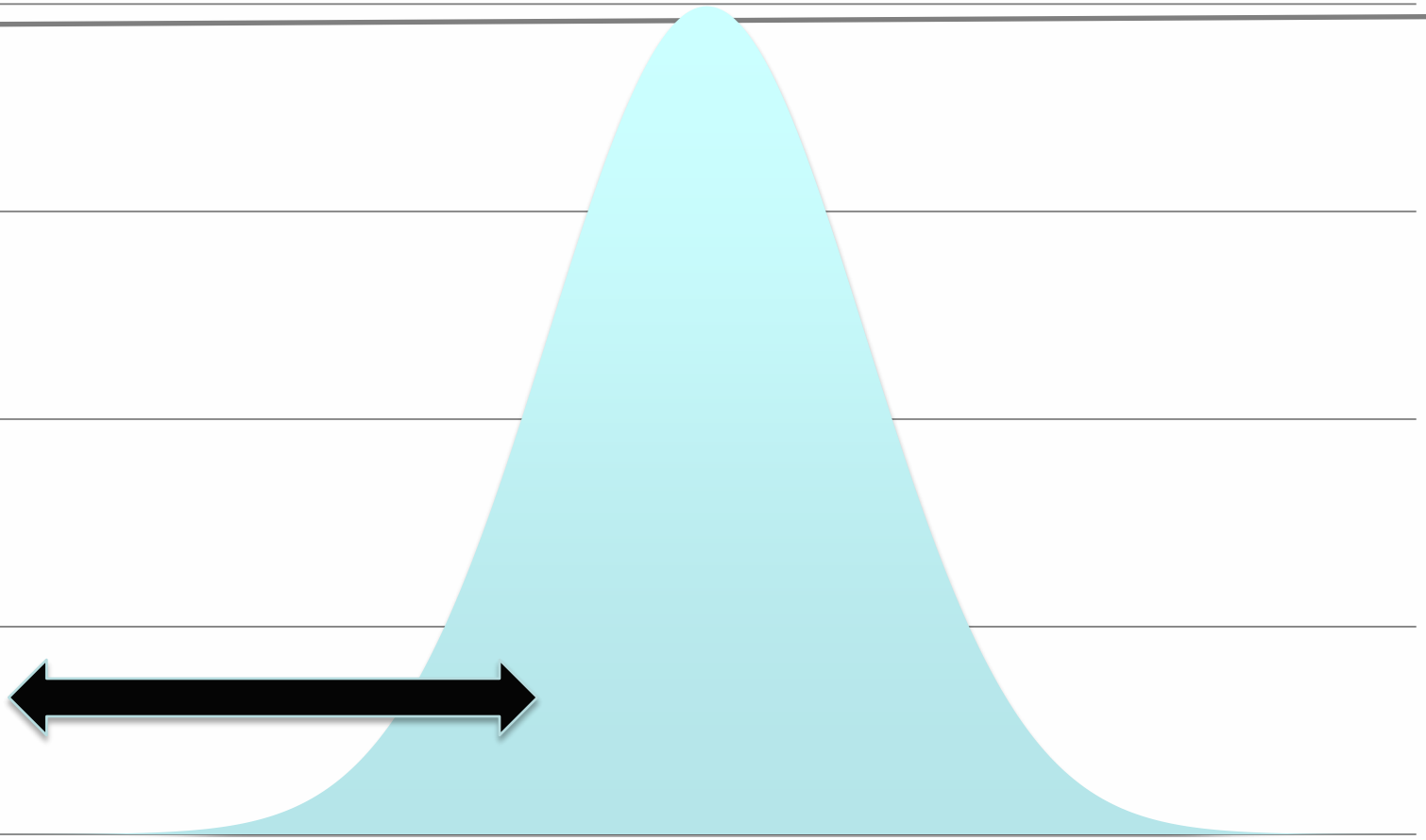
It includes:

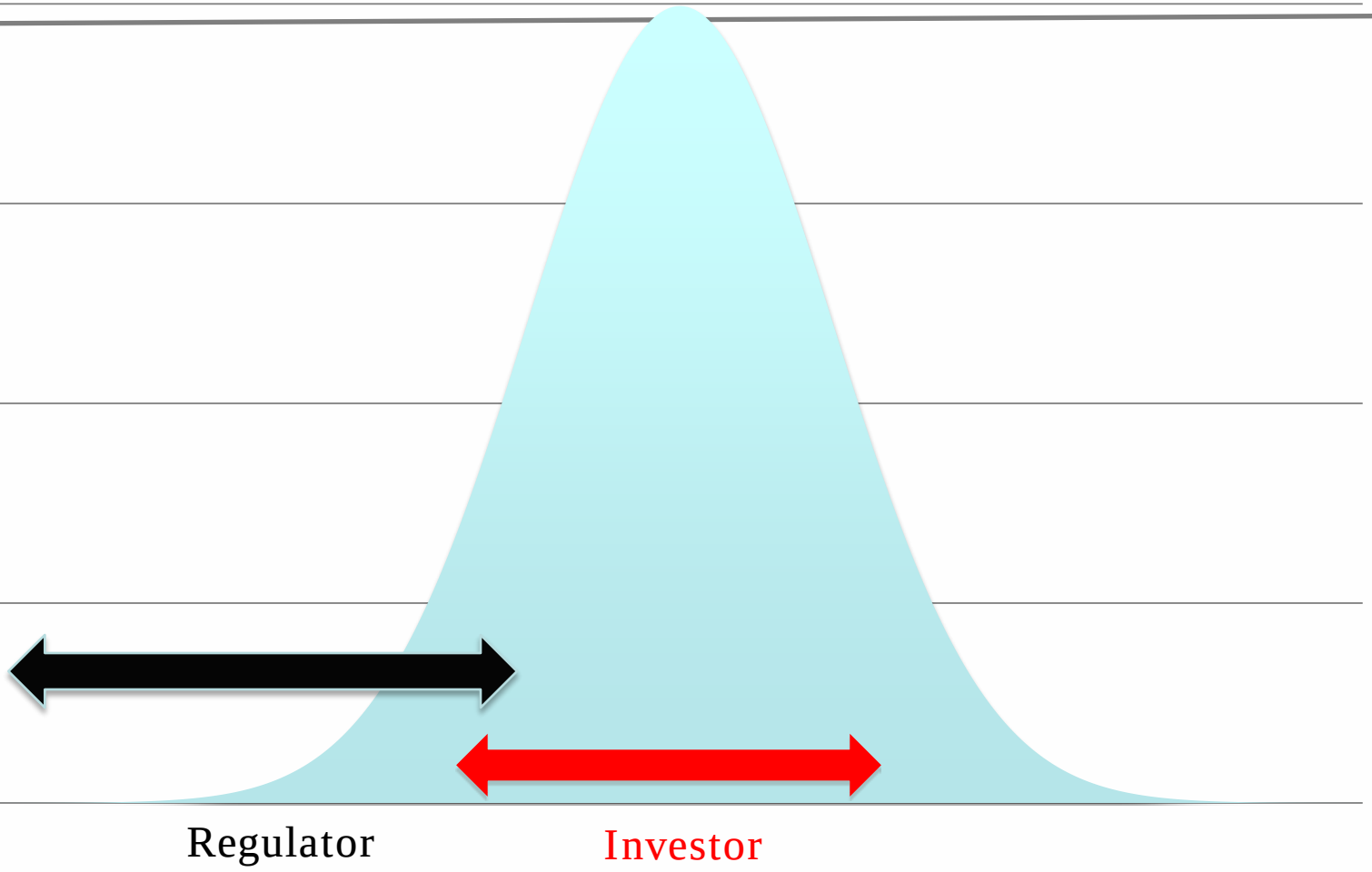
- Process controls to avoid losses
  - e.g. Leeson/Barings
- Mechanisms to transfer risk
  - e.g. insurance
  - Alternate Risk Transfer mechanisms; e.g. securitization
- Mechanisms to report and manage risk
- Tools to measure capital needs to support risk exposure
- Methods to assess risk/return tradeoffs
  - Intersection with corporate finance

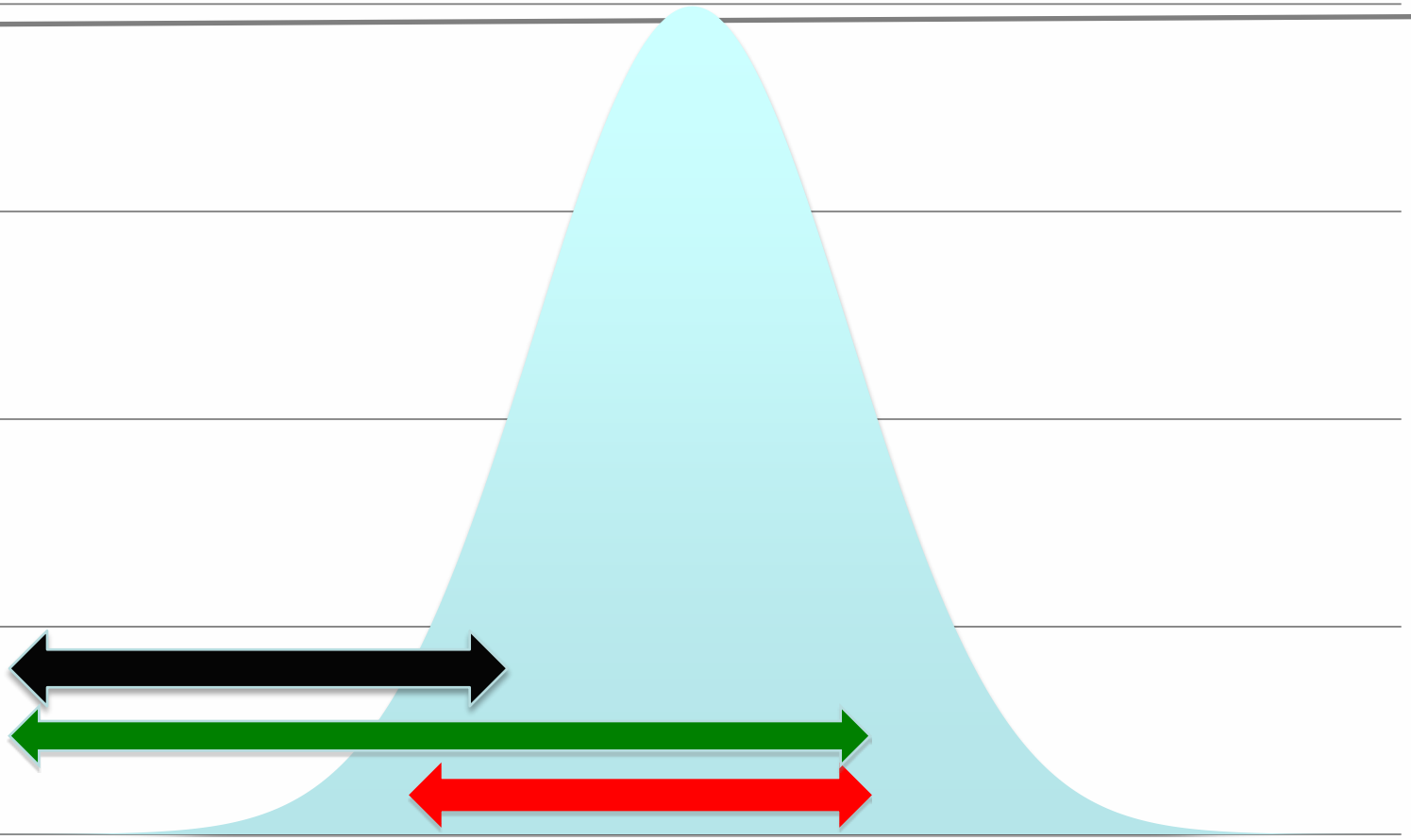
Who are the players in ERM?

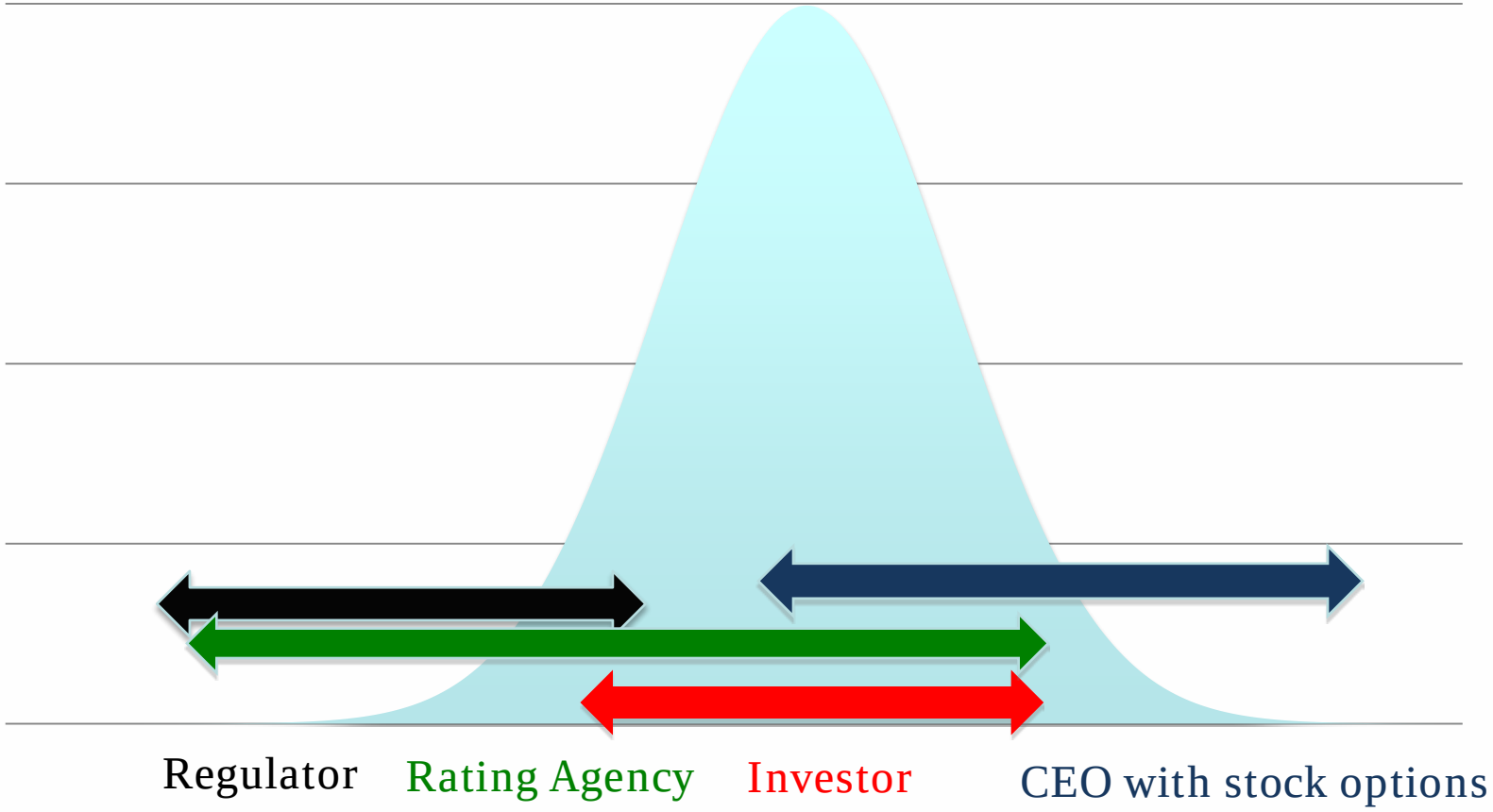
- **Banks' and insurers' management and boards**
- **Bank and insurer regulators**
  - BIS, BCBS
  - IAIS
  - national regulators of banks and insurers
- **Professional groups**
  - Auditors, actuaries, other risk professionals
- **Rating agencies**
  - Fitch, Moody, S&P, etc

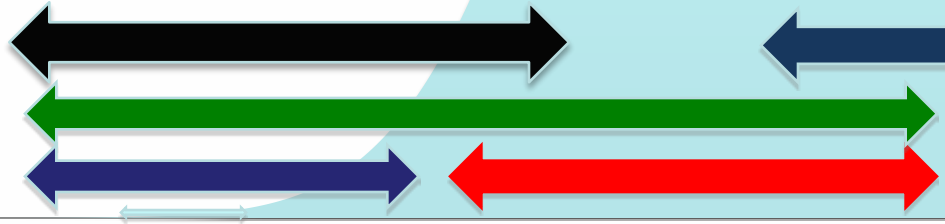


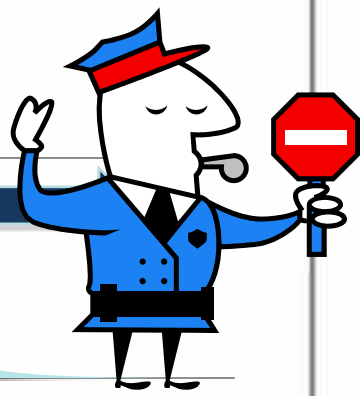

Regulator


Regulator
Investor


Regulator
Rating Agency
Investor


Regulator
Rating Agency
Investor
CEO with stock options





CRO ???

Regulator Rating Agency Investor CEO with stock options

Acknowledging Risk: Development of the CRO

- Recognition of ERM by rating agencies and regulators has caused managements of traded companies to focus on enterprise-wide risk exposure.
- Recognition of enterprise-wide risk has become an increasing part of governance of financial institutions world-wide.
- The senior management point person for risk: the CRO.

Measuring Risk: Economic Capital

- EC – the amount of capital required to sustain losses at a given risk tolerance level over some horizon
- EC – a common metric that attaches the cost of risk to strategic initiatives
- ERM adds value by exploiting risk by recognizing interdependencies
  - in contrast to many regulatory capital regimes
- This must be translated into a more efficient decision-making about capital usage

ERM – Opportunities for Actuaries

- In many countries:
  - the actuarial profession is not well understood and substantially undervalued outside the insurance field.
  - actuaries are perceived as narrow technicians.
  - the actuarial profession is vulnerable to competition and other economic pressures, even in traditional settings.

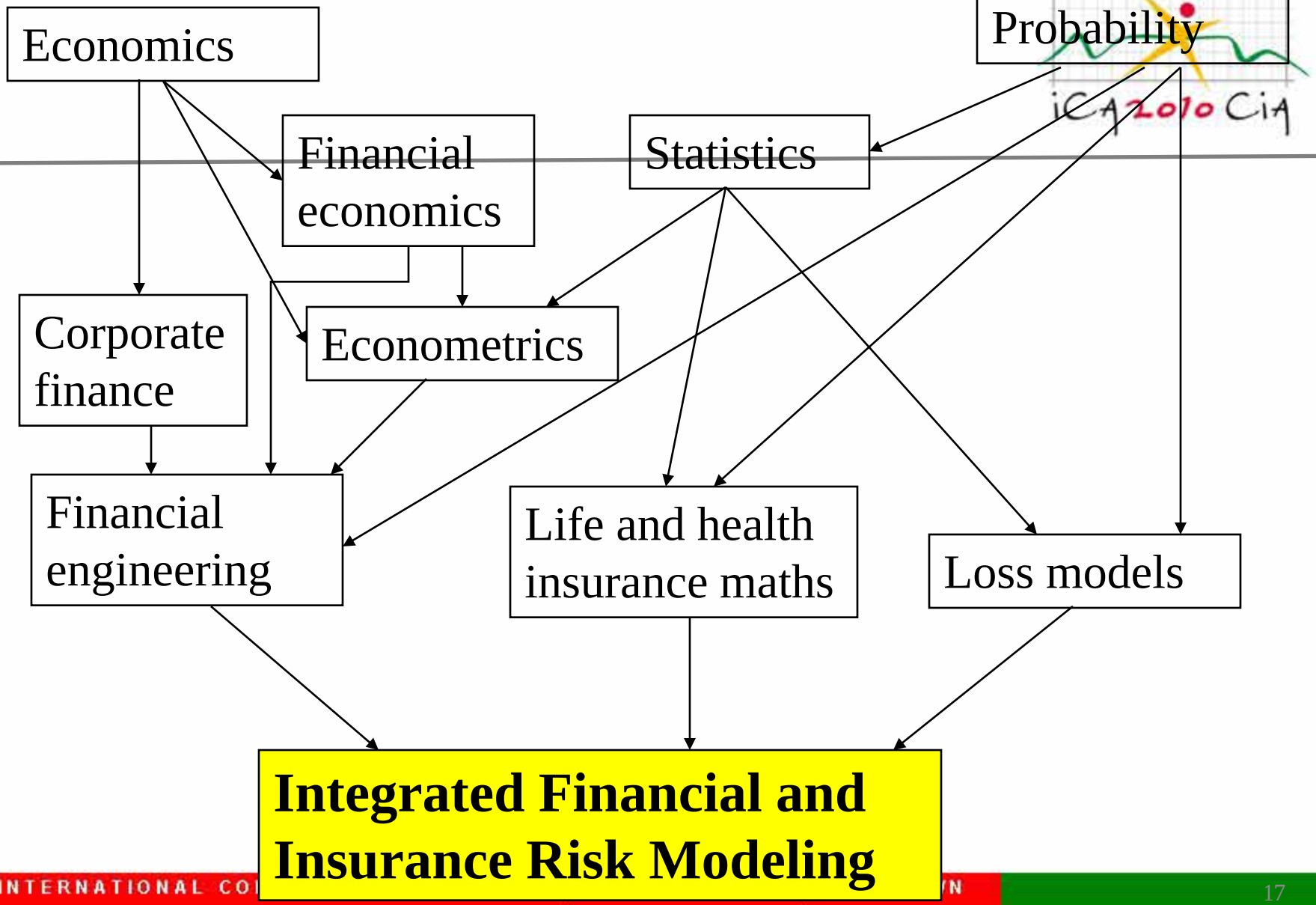
- Corollaries:
  - Actuaries have a very big advantage in the insurance field.
  - Actuaries are highly technically skilled.
  - Actuaries are well compensated.

Actuaries' response to ERM

- **Historical actuarial expertise is on exploiting product risk**
- **There is a growing actuarial knowledge base in the areas of:**
  - External risks, the occurrence of which is not under control of management
  - Interdependent risks
  - Co-ordination of risk management within entity
  - Transparency of risk management system
  - Reputation risk
  - Quantification of risk: especially low frequency, limited data
  - Long term risk: scenario testing, stress testing

Actuarial Education Growth

- **Deeper study of risk types**
  - Market risk, credit risk, operational risk, etc
- **Deeper study of risk analysis methods**
  - Many are already very actuarial
- **Deeper study of financial markets**
  - Asset side, including all types of derivatives, without reference to insurance products
- **Deeper study of financial economic theory**
  - This provides the language for addressing challenging problems such as valuation in incomplete markets


Economics
Probability
Financial economics
Statistics
Corporate finance
Econometrics
Financial engineering
Life and health insurance maths
Loss models
Integrated Financial and Insurance Risk Modeling

A global ERM credential for actuaries?

- **Background**
  - Raised in IAA Enterprise and Financial Risks Committee (Nov 2006)
  - Discussed in Presidents Forum (April and October 2007)
    - Commitment to support the development of this project by 8 associations
    - Strong interest by several others

The global risk management professional environment

- **Financial and Enterprise RM is a rapidly growing field of activity for actuaries and other risk professionals.**
  - Most large financial institutions have a CRO and a team devoted to ERM.
  - Two associations (GARP and PRMIA) have been created to organize risk professionals and certify them with credentials (FRM, PRM).
    - They have members world-wide and are seen as global players.
  - Established associations (e.g. CFA Institute) are also seen as providing risk professionals.
  - The actuarial profession has been less visible to the buyers of FRM and ERM services (although numerous individual actuaries have become prominent).

The global risk management professional environment

- **The actuarial profession is competing in this marketplace**
  - Many insurance companies have actuaries as CROs; but many do not.
  - CROs of other financial institutions could be actuaries. Why not?
  - Actuarial methods are used by other professionals RM in investment banks already (e.g. credit risk, credit derivatives, operational risk).
  - Basel II, Solvency II and other solvency initiatives create market opportunities for actuaries.

The global risk management environment

- Rating agencies are adding ERM as a key pillar in the assessment of financial institutions (e.g. S&P).
- Regulators are expanding the scope of regulation to include ERM
- Many (if not most) rated financial institutions are global in operations.
- GARP, PRMIA and others are developing their credentials as recognizable brands in the financial marketplace, including insurers.

The global actuarial environment

- Actuarial credentials are essentially national in nature.
- Actuarial credentials are well recognized in insurance for specific functions deemed to be “actuarial”.
- Actuaries are not instantly recognized for risk management expertise.
- There exists no established brand that identifies actuaries globally as ERM experts.
- The actuarial profession can compete globally with other “global” players.

What is a “global” credential?

- A single credential that is widely recognized by buyers of ERM services and widely accessible by persons who want to acquire the designation.
  - For example, a person being an FIAA can also be an CERA. It has no ‘national’ connotations.
  - This is in fundamental contrast to how we now credential actuaries; i.e. country by country.

- Questions:
  - Do global credentials have an advantage over local credentials?
  - How can the actuarial profession have a global ERM presence without undermining its existing strengths?

The credential model

- A credential built around a core body of risk management knowledge.
  - With appropriate standards for achievement of the designation.
- A group of actuarial associations act as “sponsors” of the designation.
- Allow each sponsor to determine how the standards are met locally; e.g. examinations, courses of study.
- Complete mutual recognition of CERA amongst sponsoring associations.

Features

- **All CERAs are (by definition) actuaries and members of a sponsoring organization. This means:**
  - Breadth in the program sufficient to cover core traditional actuarial subjects;
  - A CERA meets IAA education syllabus requirements;
  - Codes of conduct, discipline, etc apply as with other actuarial members;
  - Expansion of the definition of the fields of practice of actuaries and the domain of actuarial science.

Other premises

- A visible ERM brand serves as a “hook” into the marketplace:
  - *“I am an CERA and I can help you!”*
- A visible ERM brand serves as a differentiator amongst actuaries, increasing awareness and interest in ERM amongst students.
- The RM designation will not succeed unless individuals holding it are successful.
- However**, if such individuals are successful, the brand may be attached to that success.**

Development of the treaty

- In November 2007, 8 associations signed a Statement of Intent to develop the designation
- 2 working groups formed
  - Recognition – Chair: Fred Rowley, Australia
  - Syllabus – Chair: Harry Panjer, Canada
- 1 representative from each of the 8 associations on each working group
- Several associations expressed interest

Some recent developments

- **SOA**
  - developed in 2007 the CERA designation
  - has a specialist ERM track in FSA qualification
- **IA/FA**
  - developed syllabus at the specialist level
  - ST9 exam introduced in 2010
- **IAAust**
  - Has been offering intensive CPD course in ERM for life and general insurers
- Many other associations developing education materials

THE TREATY ORGANIZATIONS

GERMANY
- DEUTSCHE AKTUARVEREINIGUNG E.V.

FRANCE
- INSTITUT DES ACTUAIRES

NETHERLANDS
- HET ACTUARIEEL GENOOTSCHAP

SWEDEN
- SVENSKA AKTUARIEFÖRENINGEN

UNITED KINGDOM
- FACULTY OF ACTUARIES
- INSTITUTE OF ACTUARIES

ISRAEL
- ISRAEL ASSOCIATION OF ACTUARIES

JAPAN
- INSTITUTE OF ACTUARIES OF JAPAN

CANADA
- CANADIAN INSTITUTE OF ACTUARIES/ INSTITUT CANADIEN DES ACTUAIRES

MEXICO
- COLEGIO NACIONAL DE ACTUARIOS A.C.

UNITED STATES
- CASUALTY ACTUARIAL SOCIETY
- SOCIETY OF ACTUARIES

SOUTH AFRICA
- ACTUARIAL SOCIETY OF SOUTH AFRICA

AUSTRALIA
- THE INSTITUTE OF ACTUARIES OF AUSTRALIA

Society of Actuaries

CERA

Chartered Enterprise Risk Analyst

CREDENTIAL

Draft Syllabus

- **The draft syllabus has been crafted in terms for "overall goals" and "learning objectives"**
  - What should persons receiving the credential be able to do?
- **The syllabus content that is described is in addition to the current IAA education syllabus**
  - All credential holders will also meet IAA requirements

IAA syllabus
+ the following topics:

- ERM concept and framework
- Structure of the risk management function in an organization
- What constitutes good risk management practice
- Reporting of risk exposures
- Risk types: market, credit, operational, business, etc
- Modeling tools including extreme value theory
- Aggregation of risks including copulas
- Risk mitigation techniques
- Risk measures
- Economic capital

Overall Goals of Credential – 1

Expertise in all aspects of ERM including a thorough understanding of

- the **concept** of ERM
- the **drivers** behind ERM – governance, regulation, improvements in understanding of risk and techniques for measuring and managing risk, enterprise value protection and creation etc
- **practical aspects** of ERM, including all elements of a robust risk management framework and its operation, and critical success factors
- **standards and good practice** in use around the world
- the different **types of risk** – financial, insurance, operational, and strategic
- the **quantification of risk**, including tools and techniques and supporting mathematics
- **practices and techniques for the management** of risk, including control, mitigation, transfer, avoidance, and exploitation of risk opportunities
- the **economic value** added by sound ERM
- important **regulation and regulatory capital** requirements

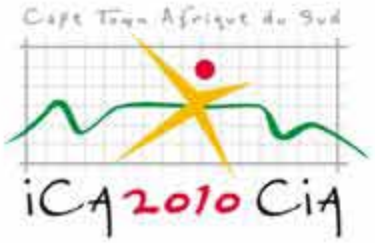
Overall Goals of Credential – 2

For the risks currently developed enough to be modeled effectively, designees should be proficient at the following tasks:

- **Independently develop reasonable models to quantify risk by type and in aggregate**
- **Parameterize the models appropriately**
  - understand when historical data is applicable
  - know when and how to apply current values
  - Be able to apply informed judgment
- **Run the models to obtain relevant results**
  - be able to focus on the key metrics
  - select appropriate number of iterations
  - be able to update the model as necessary
- **Explain the models and the results to a variety of audiences**
  - other technical ERM experts
  - managers of specific types of risk
  - individuals such as the CFO, CEO and board members

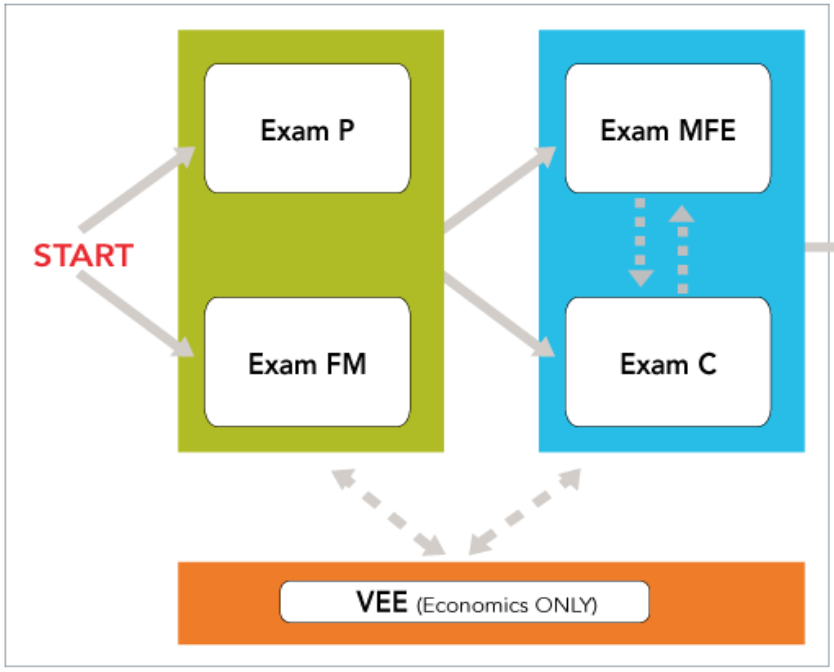
Overall Goals of Credential – 3

Also, global ERM designees should be able to perform the following tasks:

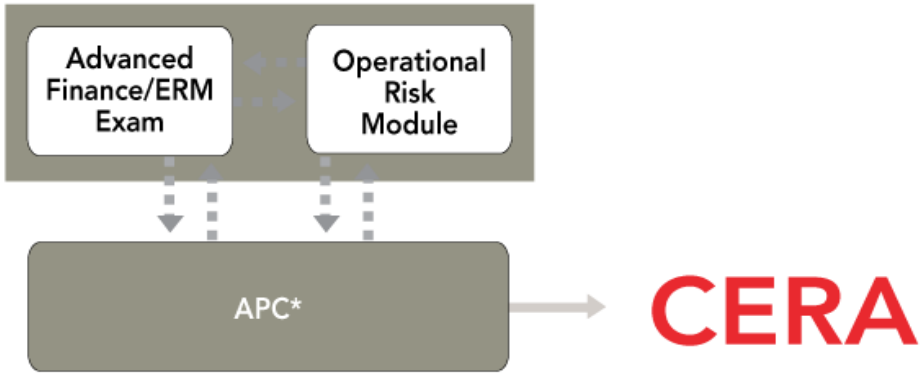


- Implement the basic steps in the risk management process for any individual type of risk and in aggregate
- Recognize how corporate governance issues can affect risk management within an organization, including organization structure and compensation incentives to accept or control risk
- Utilize the standard methods for reporting risk to boards and senior management
- Calculate regulatory capital requirements for insurers and banks
- Understand how rating agencies incorporate risk management in determining ratings
- Implement and explain economic capital models within an organization

SOA Model:
CERA Credential for ERM



*Must complete any two exams before applying.



*Special eligibility rules apply.

CATEGORY	KEY CRITERIA	TREATY REF	QUESTION
Current FQA accreditation	The current process to become an FQA is (IAA) compliant	55	Q2
	There is an adequate oversight and quality assurance process	Implicit?	Q2
Governance	The association's governance arrangements allow it to meet the obligations of the treaty.	8; 22	Q5
	The association is a full IAA member	8;22	
Administration	Intellectual property rights are available locally	22	Q5
	There is a register of individuals who have the designation	35	Needed now?
Syllabus and examination	The syllabus used covers a significant proportion of the ERM Syllabus and learning objectives	22	Q6
	There is a suitable examination process	22	Q6
	There is an ability to change the syllabus as required by the treaty	71	Q6
CPD	The associations CPD strategy includes ERM	22	Q8
Process to grant designation	There is an established process to apply for designation, and appeal against the decision	22	Q1,Q3
	There is a process to withdraw the designation	58	
External Accreditation Providers (EAPs)	There is a process to monitor EAPs	50;51	Q4
	There is sufficient control over changes in the educational programs	22	Q6
Discipline	There is a disciplinary process that includes CERA	55;58	Q6

Marketing the profession

- **External Marketing**
  - Identifies CERA actuaries as highly-trained risk professionals
  - Successful CERAs promote the qualification
  - Global qualification means more CERAs

- **Internal marketing**
  - Identifies ERM as a practice area
  - Promotes the development of actuarial methodologies
  - Motivates risk-oriented students to become actuaries

SOA experience with CERA

Year	Route	Total_CERAs	FSAs	ASAs
2007	by Exam	75	70	5
2007	Thought Leader	21	20	1
2008	by Exam	68	52	16
2008	Thought Leader	14	9	5
2008	Experienced Practitioner	120	108	12
2009	by Exam	125	43	82
2009	Thought Leader	1	0	1
2009	Experienced Practitioner	175	137	35
2010	by Exam	32	6	26
TOTALS:		631	445	183

Learning Objectives:
1. ERM Concept and Framework

- **Describe** the concept of ERM, the drivers behind it and the resulting value to organizations.
- **Explain** the principal terms in ERM.
- **Analyze** an appropriate framework for an organization's enterprise risk management and an acceptable governance structure.
- **Evaluate** an organization's risk management culture including: risk consciousness, accountabilities, discipline, collaboration, incentive compensation, and communication.
- **Demonstrate** an understanding of governance issues including market conduct, audit, and legal risk.

Learning Objectives:
1. ERM Concept and Framework (continued)

- **Demonstrate** an understanding of risk frameworks in regulatory and other environments (e.g. Basel II, Solvency II, Sarbanes-Oxley, COSO, Aus/NZ 4360, ISO 31000).

- **Demonstrate** an understand the perspectives of regulators, rating agencies, stock analysts, and company stakeholders and describe how they evaluate the risks and the risk management of an organization.

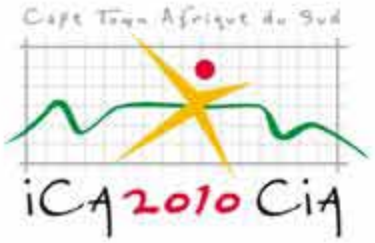
- **Propose** how an ERM process can create value for an organization through better assessment of the organization's risk profile, possible reduction in economic capital, improvement in rating, etc.

- **Relate** the risk and return trade-offs that result from changes in the organization's risk profile.

Learning Objectives:
2. ERM Process (Structure of the ERM Function and Best Practices)

- **Demonstrate** how to articulate an organization's risk appetite, risk philosophy and risk objectives.
- **Demonstrate** a desired risk profile and appropriate risk filters.
- **Assess** the overall corporate risk exposure arising from financial and non-financial risks.
- **Compare** the relevance of risk measurement and management to various stakeholders including customers, regulators, government, company directors, professional advisors, shareholders and the general public.

Learning Objectives:
2. ERM Process (Structure of the ERM Function and Best Practices) (continued)



- **Demonstrate** an understanding of the role of contagion and how it affects different stakeholders.
- **Evaluate** the elements of a successful risk management function and recommend a structure for an organization's risk management function.
- **Determine** how financial and other risks and opportunities influence the selection of strategy.
- **Demonstrate** the application of a risk control process such as the Risk Management Control Cycle or other similar approach.
- **Propose** ERM solutions or strategies to address real (case study) and hypothetical contexts.

Learning Objectives:
3. Risk Categories and Identification

- **Explain** what is meant by risk and uncertainty.
- **Describe** different definitions and concepts of risk.
- **Discuss** risk taxonomy.
- **Investigate and interpret** financial and non-financial risks faced by an entity, including but not limited to:

  currency risk, credit risk, spread risk, liquidity risk, interest rate risk, equity risk, hazard/insurance risk, other product risk, operational risk, project risk and strategic risk.

Learning Objectives:
4. Risk Modelling and Aggregation of Risks

- **Demonstrate** how each of the financial and non-financial risks faced by an entity can be amenable to quantitative analysis.
- **Demonstrate** enterprise-wide risk aggregation techniques incorporating the use of correlation.
- **Evaluate and select** appropriate copulas and how copulas can be used as part of the process of modelling multivariate risks.
- **Demonstrate** the use of scenario analysis and stress testing in the risk measurement process.
- **Examine** the use of extreme value theory to help model risks.
- **Demonstrate** the importance of the tails of distributions, tail correlations, and low frequency / high severity events.
- **Demonstrate** an understanding of model and parameter risk.
- **Evaluate and select** appropriate models to handle diverse risks, including the stochastic approach.

Learning Objectives:
5. Risk Measures

- **Apply** risk metrics to quantify major types of risk exposure in the context of an integrated risk management process.
- **Demonstrate** the properties of risk measures (e.g. VaR and TVaR) and their limitations.
- **Analyse** quantitative financial and insurance data using modern statistical methods (including asset prices, credit spreads and defaults, interest rates and insurance losses).
- **Evaluate** best practices in risk measurement, modelling, and management of various risk types.
- **Analyse** credit risk as related to fixed income securities.

Learning Objectives:
6. Risk Management Tools and Techniques

- **Relate** the rationale for managing risk and the selection of the appropriate degree of hedging of risk.
- **Demonstrate** risk optimisation and the impact on an organization's value of an ERM strategy.
- **Demonstrate** means for reducing risk without transferring it.
- Identify and describe means for reducing risk without transferring it.
- **Demonstrate** how derivatives, synthetic securities, and financial contracting may be used to reduce risk or to assign it to the party most able to bear it.
- **Determine** an appropriate choice of hedging strategy for a given situation (e.g., reinsurance, derivatives, financial contracting), which balances benefits with inherent costs, including exposure to credit risk, basis risk, moral hazard, and other risks.
- **Demonstrate** an understanding of the practicalities of market risk hedging, including dynamic hedging.

Learning Objectives:
6. Risk Management Tools and Techniques (cont'd)

- **Define** credit risk as related to derivatives; define credit risk as related to reinsurance ceded; define counter-party risk and describe the use of comprehensive due diligence and aggregate counter-party exposure limits.

- **Apply** funding and portfolio management strategies to control equity and interest rate risk, including key rate risks. Explain the concepts of immunization including modern refinements and practical limitations.

- **Analyse** application ALM principles to the establishment of investment policy and strategy including asset allocation.

- **Identify and interpret** other key risks (e.g. operational, strategic, legal, and insurance risks) and uncertainty and possible mitigation strategies.

Learning Objectives:
7. Economic Capital

- **Interpret** the concept of economic measures of value (for example, EVA, embedded value, economic capital) and their uses in corporate decision-making processes.
- **Apply** risk measures and how to use them in economic capital assessment.
- **Propose** techniques of allocating/appropriating the “cost” of risk/capital/hedge strategy to business units in order to gauge performance (e.g. returns on marginal capital).
- **Develop** the ability to develop an economic capital model for a representative financial firm.

Fixing Global Finance – A call to action

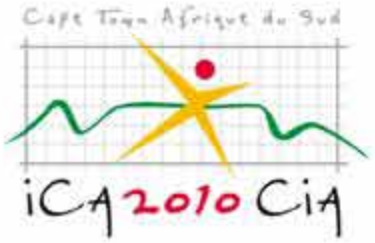
Source: WSJ, 14 Dec 2009

1. **Higher capital requirements: increased risk weightings, A/L limits, etc**
2. Empower the Financial Stability Board: Define and seek agreement on broad principles
3. **Promote risk management: Board must understand risks. Create globally recognized qualifications for risk managers, and implement standard certification through a "driving test."**
4. Improve regulator resources: To improve quality of regulators' understanding of regulated industries.
5. **Better governance: CRO should report to board and not to the CEO.**
6. Avoid regulatory arbitrage: Standardize regulation across industries and across countries.
7. Overhaul rating agencies: to improve investor confidence.
8. Market infrastructure: to facilitate orderly unwinding of failed institutions.
9. Countries should follow the FSB
10. **New product transparency: Improve structural and pricing of products using modeling and stress testing.**

Source: WSJ, 14 Dec 2009

Fixing Global Finance – A call to action

Source: WSJ, 14 Dec 2009



11. Regulators adopt priorities: To adopt IFRS and capital and liquidity requirements.
12. Effective enforcement: "Wallet" effect and consistency across countries.
13. Global imbalance focus: G-20 focus on global economic imbalance.
14. **Rebuild responsibility:** Financial services industry must promote responsible behavior by all practitioners**.**
15. **Strengthen infrastructure:** To support innovation at firm and market level.
16. Resist over-regulation: Balance innovation and regulation.
17. Regulatory mandate: for financial stability and across borders.
18. **Living wills:** Banks must plan for wind-down in case of unsustainable losses.
19. Don't regulate borrowers: Focus on sources of credit.
20. Clarify IMF role: should focus on global imbalances, leaving financial stability principles to the FSB.

Actuaries understand

1. that risks seldom are normally distributed.
2. that models need to be recalibrated as new data become available.
3. that 'models drift' occurs as use of models influences market behaviour
4. that 'spirals' occur. Slicing, dicing and repackaging risk multiple times can lead to the ultimate holder of risk not understanding and not managing its risk exposure.
5. the challenges of valuation where no deep market exists.
6. the importance of the long-term view in making short-term decisions.
7. the 'actuarial control cycle' as a framework for updating and overall management of models.
8. the importance of transparency of producing reports.
9. professional standards as guideposts for professional practice.
10. the quasi-fiduciary role they play in the lives of those who rely on them.

Source: "Actuaries would have made a difference," W. James McGinnitie, *Beyond Risk,* Fall-Winter 2009.

Thank you for your attention