

ERM Is The “Future” Train

Jump On The “Future” Train!

*Warning: This talk may be thought-provocative.
Please buckle up.*

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Oct. 10, 2005

Speech at the 40th Annual Meeting
American Academy of Actuaries

Spoke at the Academies

- Two years ago I was invited to speak in D.C. by the Academies
 - It was the *National Academies* who jointly organized an ERM Workshop with the IRS
 - I was probably the only actuary presenter at that ERM Workshop
 - Actuaries are not the only players in ERM.

ERM Is The “Future” Train

- There are many passengers on board
 - actuaries, accountants, financial engineers
 - Various institutions
- Actuarial professional organizations are pushing their way in ...
 - However, they are carrying too large a baggage

The Train Will Travel Very Fast

- *Rule of thumb for the pace of change:*
 - The changes took place in the past 100 years = that in the prior 2000 years
 - The changes in the past 20 years = the prior 80 years
 - Future changes within the next 20 years = changes in the past 100 years

Innovation Is The Way To Go

- Only through innovation can organizations survive the rapid changes
- Innovation in educational delivery, research break-through and greater collaboration

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What Is that Baggage?

- An institutional structure that is more concerned with existing than going forward
- In particular, outdated actuarial exam system hinders innovation in risk education
 - Too much focus on exam tricks rather than understanding concepts & hands-on skills
 - Too narrowly focused, strange notations
 - Interrupts regular university course work
 - A glaring example: Life contingencies

Consequences

- Actuarial teachers are not viewed highly by peers (eroded academic base)
- Some working actuaries are too specialized in doing one thing, without being able to see the big picture
- Many employers are frowning about long travel time, little value-added

What The Actuarial Profession Needs To Do?

- Entrust universities to provide the basic education
- Free up itself to focus on real-world issues, research, and continuing ed
- Outward looking attitude
- Encourage more interaction with other disciplines

Actuaries Have “Good Staff” To Bring To The ERM “Train”

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Actuaries Posses Valuable Skills

- Actuaries can model asset risks, liability risks, and perform integrated asset-liability management
- Some actuaries are actively interacting with capital markets for hedging
- Actuaries deal with products of short- and long- time horizons

Strength of Actuaries

- Actuarial risk theory are becoming a common tool for operational risk modeling
- Actuaries are accustomed to modeling consumer behaviors
- High ethical standard
- Strong international base

To Name A Few ...

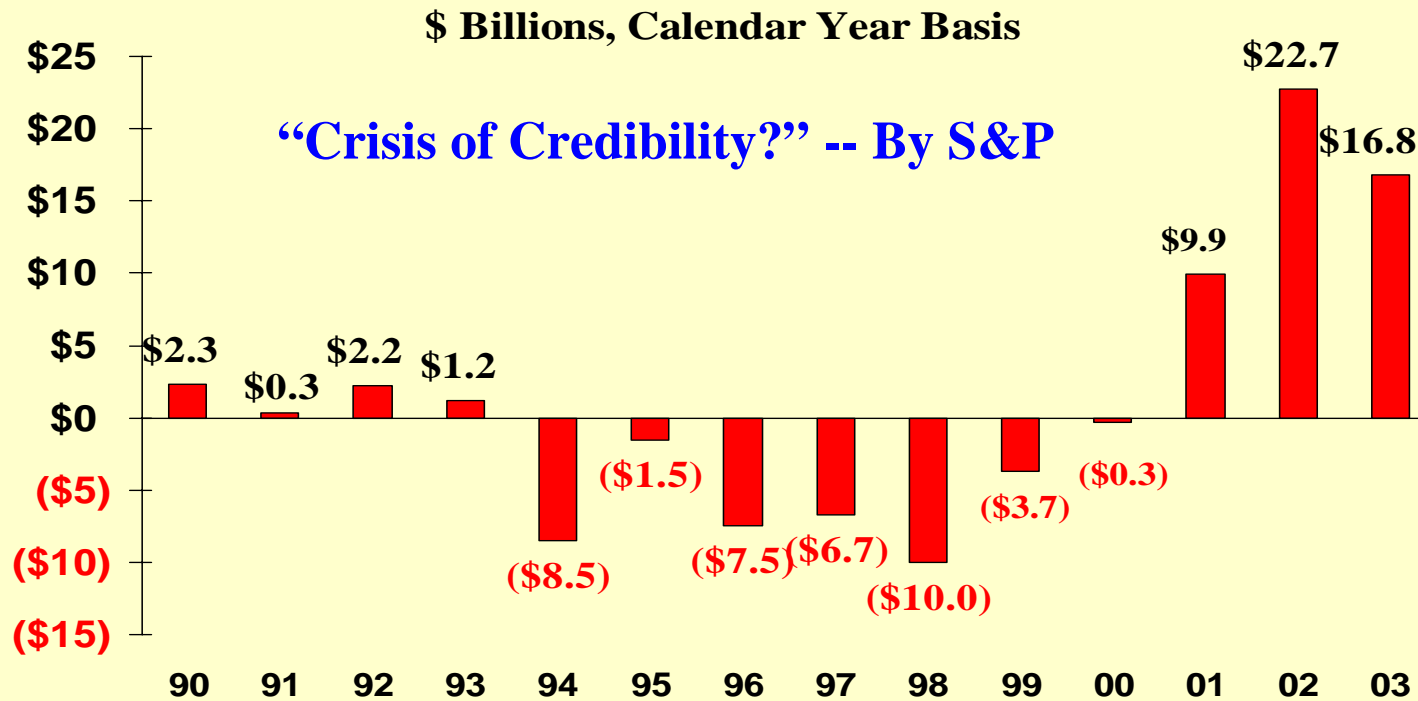
- Redington's theory of immunization
- P. Boyle first applied Monte Carlo simulation to value options
- P. Artzner et al made a huge push for coherent measure of risk
- David Li brought “copula” to Wall Street credit risk modeling
- Paul Embrechts popularized extreme value theory and tail dependence in finance

Innovation Needed In Actuarial Methodology

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Non-life Insurance Industry Prior Year Reserve Development*



Source: A.M. Best, Morgan Stanley, Dowling & Partners Securities

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Wildly Unstable Capital Allocation Methods

In 2001, the CAS
called for papers to
analyze a
hypothetical insurer

Some all-star players
responded

Source: *Gary Venter,
Feb 2002 Actuarial
Review*

	Philbrick & Painter *	Bohra & Weist **	
	% of Surplus Allocated	% of Surplus Allocated	Relative Ratio
Workers Comp	41%	11%	3.73
Auto Liab	26%	29%	0.90
HO/CMP Prop	11%	51%	0.22
Auto Phys Dmg	1%	1%	1.00
GL/CMP Liab	21%	8%	2.63
Total	100%	100%	

* From Swiss Re

** From Munich-American Re

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The Diversification Puzzle

- One of the most challenging issues
- Banking Basel II factor-based approach implies additive capital charges
- Insurance RBC has a square-root formula
 - Very different incentives effects from that of Banking Basel II

Actuaries Can Become More Effective If Equipped With ERM Thinking

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Data vs. Information

- Famous quote of Sir. David R. Cox
 - “Lots of data, but little information”
- We can spend much time doing data mining and trying various analytical machinery
- Often times there are bigger issues ...

Unknown vs. Randomness

- Unknown (states of the world) is different from random
- Guess from observing movements of shadows
- Why don't we go inside and look at the actions

Need Further Research On

- The risk drivers & valuation dynamics
- The mathematics of value/wealth creation
- How financial innovations can create value (and create new risks)
- Correlation & Diversification

Future of Actuarial Education

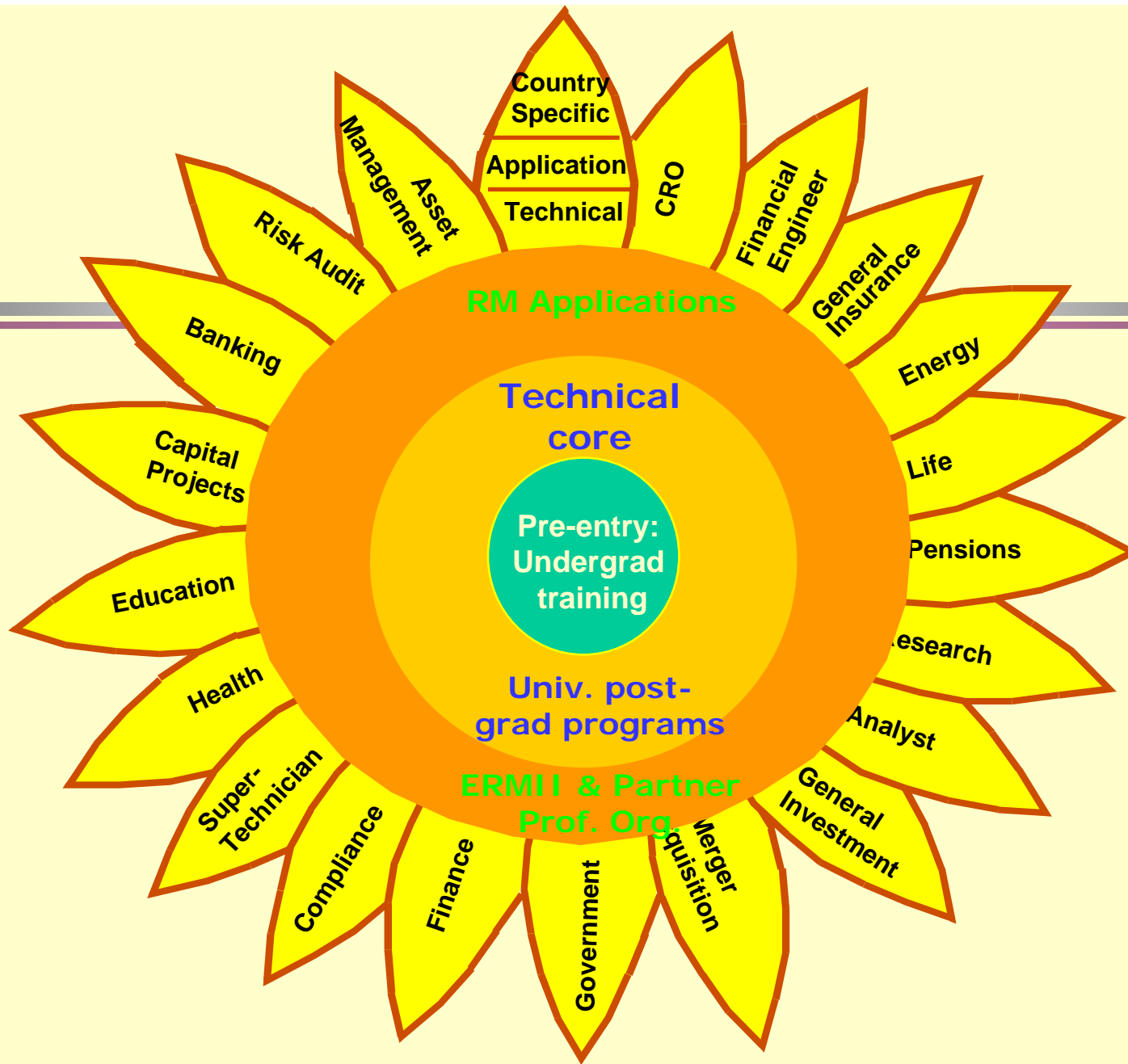
- The actuarial profession must embrace broad-based risk management
- The best way going forward is university-profession partnership
 - One provides the basic education
 - The other focuses on professional training
- This vision was behind a major international initiative



- ERMI had its first Board Meeting in NYC on Sept 25/26, 2005
- 24 participants from 5 countries (Australia, Canada, France, United Kingdom, and the U.S.)
- 8 major university programs in actuarial science and financial engineering

ERMII Objectives

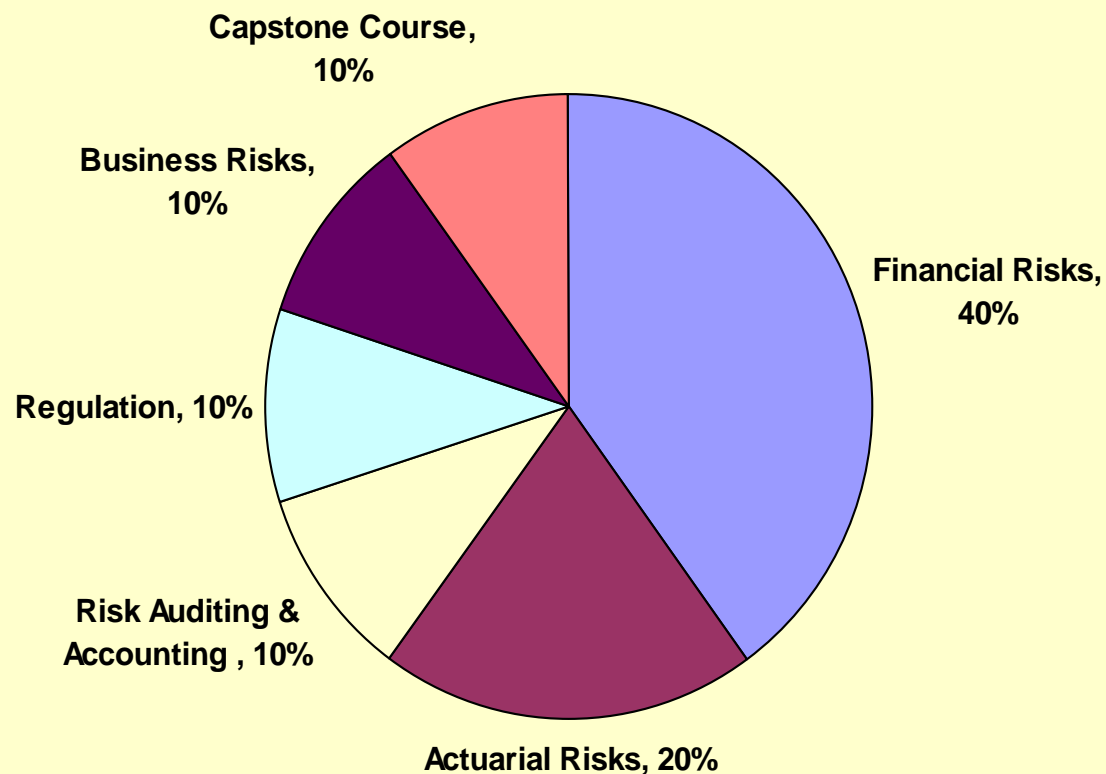
- ERMII aims at overcoming these constraints through research driven university education
 - what is best practice now and what needs to change to adapt
- ERMII wishes to accredit 40+ university programs worldwide in quantitative risk management within 4 years



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Core Skill Set?



- University education can provide a broad-based theoretical foundation
- Class-room or lab setting can facilitate hands-on learning

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ERMII Accreditation of University Programs

- Extent of coverage of major areas in risk management and risk modelling
- Strong emphasis on quantitative modelling
- Academic staff and qualifications
- Program entry requirements and student backgrounds
- Research program in risk management and related areas

Fueling the ERM “Train” Engine

- Attract and educate future talents
- Conduct research and create knowledge base on ERM issues
- Actuarial bodies should be engaged with ERMII to jointly develop this broader education

The “Future” Train Is Leaving!

- **Get Rid Of The Old Baggage,**
- **Keep the good stuff**
- **Jump On The “Future” Train!**

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The “Future” Is Exciting!

Enjoy the Ride!

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