

ERM and Actuaries

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imagination at work

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Summary

1. Benchmarking ERM in derivatives firms indicates **actuaries are practicing ERM for insurers**
2. Actuaries are the **leading candidates** for ERM leadership in insurance and pensions
3. **Operational Risk** best practice is evolving towards actuarial science
4. P&C Actuaries have a **golden opportunity** for leadership in operational risk analysis and management

Derivatives Firm Risk Management

ERM Best practices from leading industries

Resource: *The Practice of Risk Management*, Goldman Sachs (GS), Risk Books, 1996

- > Securities firm risk management market standard reference

Insurers and reinsurers sell derivative-like products

- > Long-dated, illiquid, OTC derivatives on untraded underlyings

Not taking any position regarding the accounting treatment of life insurance products and embedded options

GS: Structure and Skills of Centralized Risk Mgmt Group

1. Risk Monitoring and Analysis
2. Quantitative Analysis
3. Price Verification
4. Model Development
5. Systems Development and Integration

Derivatives Risk Management

Role	Responsibility	In Insurance and Pensions
Risk Monitoring and Analysis	<ul style="list-style-type: none">• Monitor position and price data• Evaluate risk exposures• Identify and monitor limit violations• Analyze potential scenarios• Summarize and report on risk exposures• Reconcile with other areas• Perform backtesting	Valuation, Experience Analysis

Derivatives Risk Management

Role	Responsibility	In Insurance and Pensions
Quantitative Analysis	<ul style="list-style-type: none">•Determine modeling for new products•Design new quantitative models•Test new models	Pricing, Valuation
Price Verification	<ul style="list-style-type: none">•Verify prices of complex derivatives•Track changes in pricing models	Pricing

Derivatives Risk Management

Role	Responsibility	In Insurance and Pensions
Model Development	<ul style="list-style-type: none">•Develop new models for system•Develop risk analysis tools•Maintain historical return data	Pricing, Valuation
Systems Development and Integration	<ul style="list-style-type: none">•Develop infrastructure to support processing•Accept feeds from other systems•Automate data scrubbing and translation•Develop database to support risk data	Pricing, Valuation

Operational Risk Definition

www.casact.org/coneduc/spring/2005/handouts/verheyen.ppt

How does the banking industry define Operational Risk?

“Operational Risk is defined as the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.”

Basel Committee on Banking Supervision

“International Convergence of Capital Measurement and Capital Standards”

Operational Risk Examples

www.casact.org/coneduc/spring/2005/handouts/verheyen.ppt

Banking (Basel)	Insurance Corollary
Mismarking Position (Intentional)	Under-Reserving (Intentional)
Model Errors / Misuse	Under-Pricing, Under-Reserving (Unintentional)
Outsourcing	Delegation of Underwriting Authority
Non-Client Counterparty Disputes	Reinsurance Disputes
Fiduciary Breaches	Bad Faith Claims
Fraud	Fraud
Anti-Trust Violations	Anti-Trust Violations
Natural Catastrophe / Terrorism	Natural Catastrophe / Terrorism*

* It is important to distinguish between the insurer's operational exposure to natural catastrophe / terrorism and that exposure assumed from other parties as a covered insurance risk. Risks should be Serially Exclusive and Mutually Exhaustive ("SEME"). In other words, every risk falls in one and only one bucket.

Operational Risk and P&C Actuaries

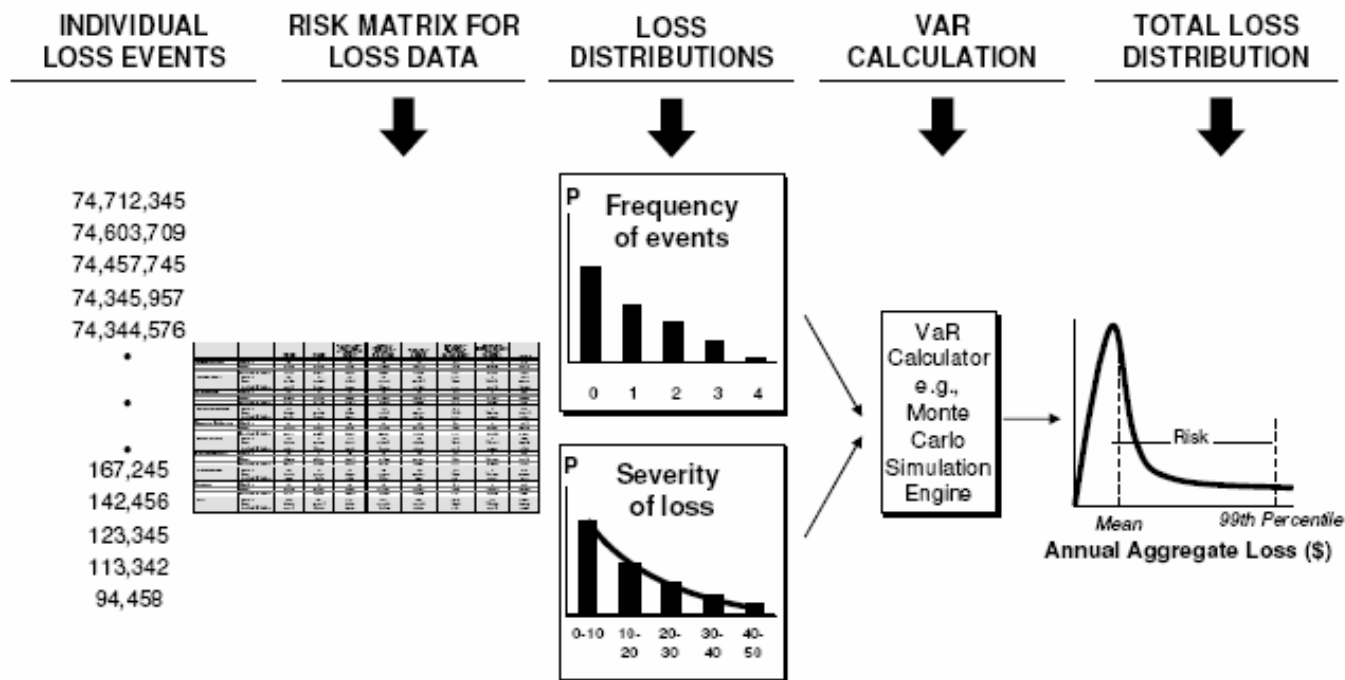
A GOLDEN OPPORTUNITY

- Commercial property and liability insurance is essentially the coverage of "**insured operational losses.**"
- An Operational Risk Management system is an **internal insurance program.**
- The same analytical techniques -- actuarial techniques -- can be applied to the analysis and management of all operational risks.
- Actuarial science has one hundred years plus of lessons learned and best practices to share.
- Actuaries are experts in internal risk modeling and probabilistic decision making, both core components of any sophisticated operational risk management system.

Operational Risk Best Practice

www.casact.org/coneduc/spring/2005/handouts/samad-khan.ppt

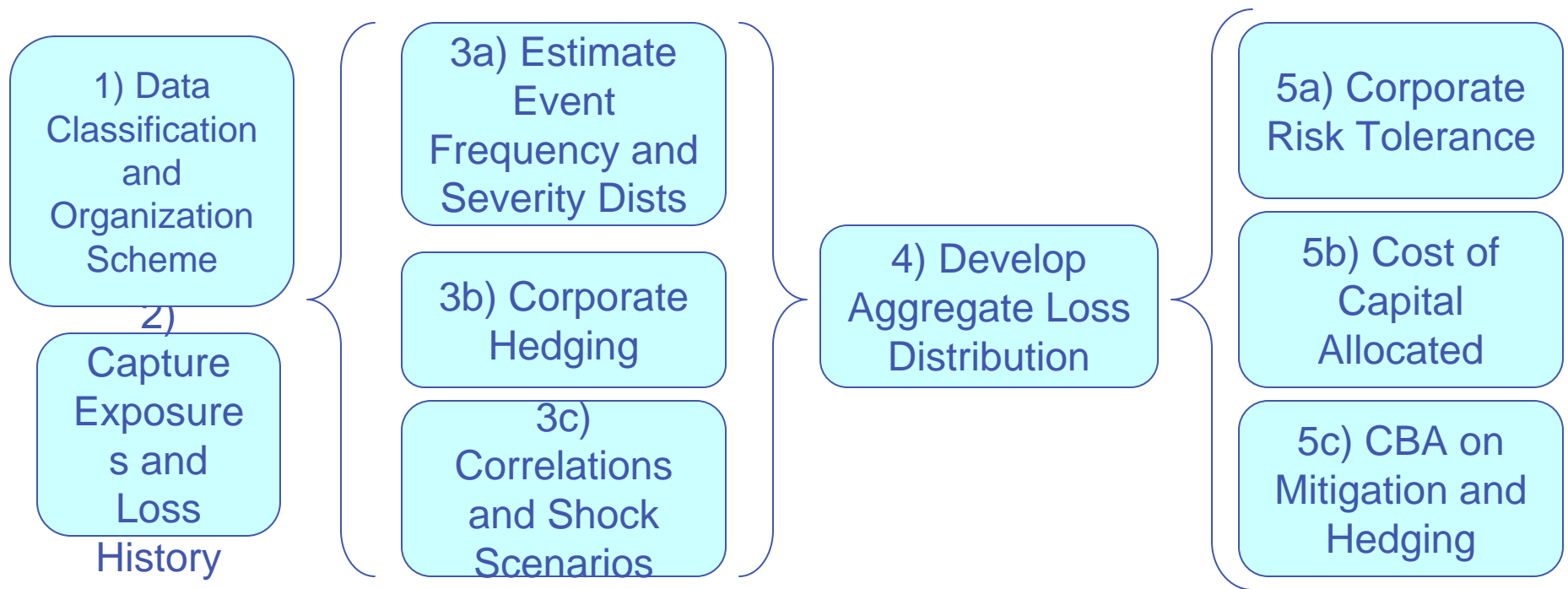
Risk is measured using internal and external loss data. The two measures of exposure are the aggregate mean and aggregate Value at Risk (VaR).



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Operational Loss Modeling Framework



Next Steps Implied By This?

We are the ERM leaders of our traditional practice areas

We must learn about ERM

We must reframe our traditional roles as part of the larger ERM context

We must prepare to be part of the new Risk Profession (whatever it looks like)

We cannot be protectionist

We must embrace expansion fearlessly and confidently

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Thank you for your attention

