Actuaries in Banking: Presentation at VIII Simposio Internacional de Actuaría

Ben Marshall, FSA, FCIA, MAAA, CERA
Regional Director, Americas

Thursday, November 14, 2024

11:00AM – 12:00 Noon

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Professional Bio and Background in Banking

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Overview of Presentation:

1. Actuarial Skill Sets: The Supply Side
2. Roles in Banking: The Demand Side
3. Regulatory Supervision: Overlap Between Insurance and Banking
4. IAA Guidance: Actuaries Preparing for Work in Banking
5. Challenges for Actuaries in Banking
6. The Society of Actuaries (SOA)
7. Questions & Answers (Q&A), if time permits

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1. Actuarial Skill Sets: The Supply Side (What do we have to offer?)

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International Actuarial Association (IAA) Description of a "Qualified Actuary"

- A professional trained in evaluating the current financial implications of future contingent events.
- The actuary's job: to assist in the scientific analysis and quantification of risks.
- Expertise in understanding the underlying business dynamics, backed by training in economics, finance, demographics, statistics, and risk management.
- Build models which make best use of the available information.

HOW MANY OF THESE RELATE TO BANKING???

International Actuarial Association (IAA) Education Syllabus: "Supporting" Learning Areas

1. STATISTICS
2. ECONOMICS
3. FINANCE
4. FINANCIAL SYSTEMS
5. ASSETS (INVESTMENTS)

International Actuarial Association (IAA) Education Syllabus: “Core” Learning Areas

6. DATA AND SYSTEMS

Aim: To enable students to apply methods from statistics and computer science to real-world data sets in order to answer business and other questions, in particular with application to questions in long and short term insurance, social security, retirement benefits, healthcare and investment.

- 6.1 DATA AS A RESOURCE FOR PROBLEM SOLVING
- 6.2 DATA ANALYSIS
- 6.3 STATISTICAL LEARNING (MACHINE LEARNING)
- 6.4 PROFESSIONAL AND RISK MANAGEMENT ISSUES
- 6.5 VISUALIZING DATA AND REPORTING

International Actuarial Association (IAA) Education Syllabus: “Core” Learning Areas

7. ACTUARIAL MODELS

Aim: To enable students to apply stochastic processes and actuarial models to actuarial work, in particular to applications in long and short term insurance, social security, retirement benefits, healthcare and investment.

- 7.1 PRINCIPLES OF ACTUARIAL MODELLING
- 7.2 FUNDAMENTALS OF SEVERITY MODELS
- 7.3 FUNDAMENTALS OF FREQUENCY MODELS (I.E., PROBABILITY)
- 7.4 FUNDAMENTALS OF AGGREGATE MODELS
- 7.5 SURVIVAL MODELS
- 7.6 ACTUARIAL APPLICATIONS

International Actuarial Association (IAA) Education Syllabus: “Core” Learning Areas

8. ACTUARIAL RISK MANAGEMENT

Aim: To enable students to apply core aspects of individual risk management and enterprise risk management to the analysis of risk management issues faced by an entity, and to recommend appropriate solutions.

- 8.1 THE RISK ENVIRONMENT
- 8.2 RISK IDENTIFICATION
- 8.3 RISK MEASUREMENT AND MODELLING
- 8.4 RISK MITIGATION AND MANAGEMENT
- 8.5 RISK MONITORING AND COMMUNICATION

International Actuarial Association (IAA) Education Syllabus: “Core” Learning Areas

9. PERSONAL AND ACTUARIAL PROFESSIONAL PRACTICE

Aim: To enable students to apply their technical knowledge and skills in an effective, practical and professional manner.

- 9.1 EFFECTIVE COMMUNICATIONS
- 9.2 PROBLEM SOLVING AND DECISION MAKING
- 9.3 PROFESSIONAL STANDARDS
- 9.4 PROFESSIONALISM IN PRACTICE

IAA Education Syllabus – CORE Learning Areas (6-9) and SUPPORTING (1-5)

HOW MANY OF THESE RELATE TO BANKING???

SOA Competency Framework: 8 broad competencies for actuaries

- Communication
- Professional Values
- External Forces and Industry Knowledge
- Leadership
- Relationship Management and Interpersonal Collaboration
- Technical Skills and Analytical Problem-Solving
- Strategic Insight and Integration
- Results-Oriented Solutions

SOA Competency Framework: 8 core competencies

Link for self-assessment tool:

- https://www.soa.org/professional-development/competency-assessment-tool/

2. Roles in Banking: The Demand Side (What do banks need?)

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Key actuarial technical skills transferable to banking:

1. Use of experience data and financial models for banking products (e.g., mortgages, with credit risk as a decrement).
2. Regulatory/economic capital and stress testing frameworks for banks.
3. Enterprise risk management (ERM) techniques for banks.

1. Experience data and financial models for banking – simple example

Expected Loss = PD x LGD x EAD, where:

- **Probability of Default (“PD”) – i.e., “FREQUENCY” from the IAA syllabut**
- **Loss Given Default (“LGD”) – i.e., “SEVERITY” from the IAA syllabus**
- **Exposure at Default (“EAD”) – i.e., “EXPOSURE” from the IAA syllabus**

“Expected Loss” is a required bank calculation, known in different jurisdictions as:

- **Expected Credit Loss (ECL) under IFRS 9 globally, or**
- **Current Expected Credit Loss (CECL) under FASB in the U.S.**

1. Experience data and financial models for banking – simple example

Expected Loss = PD x LGD x EAD

- **Estimating Probability of Default (“PD”):**
  - **Rating Scorecard: “Application” vs. “Behavioral” – use regression or equations to map to PD estimate**
  - **Roll-rate (or transition matrix) approach: measure migrations between states over a fixed period**

1. Experience data and financial models for banking – simple example

Expected Loss = PD x LGD x EAD

- **Estimating Loss Given Default ("LGD"):**
  - **Discounted cashflow model of recoveries on defaulted assets; LGD = exposure – recoveries**
  - **Run-off triangle (or chain-ladder): not suitable for mortgages**
  - **Expert judgment + external benchmarks: e.g., for corporate loans**

- **Different model parameters for different risk classes (e.g., Loan-to-Value Ratio, Secured vs. Unsecured, Industry)**

1. Experience data and financial models for banking – simple example

Expected Loss = PD x LGD x EAD

- **Estimating Exposure at Default (“EAD”):**
  - **Credit Conversion Factors (CCF):**
    - **Utilization at start of current period**
    - **Utilization at Default**
  - **Max { current loan balance, facility limit }**

2. Regulatory/economic capital and stress testing frameworks for banks.

Basel III: A Global Regulatory Framework for Banks and Bank Capital Requirements

- ***Quantity and quality of capital***
- ***CVA risk (credit valuation adjustment risk)***
- ***Capital buffers***
- ***Leverage ratio and buffer***
- ***Liquidity ratios***
- ***Market Risk***
- ***Credit risk***
- ***Operational risk***

2. Regulatory/economic capital and stress testing frameworks for banks.

- Similarity to Regulatory/economic capital for insurance (e.g., Solvency II, RBC, MCCSR/LICAT)
- Similar modeling requirements
- Similar model validation needs

KEY POINT: Actuaries with insurance capital modeling knowledge and experience have transferable skills for bank capital modeling needs!

2. Regulatory/economic capital and stress testing frameworks for banks.

“Stress testing” is: a technique used to test the resilience of institutions and investment portfolios against possible future financial situations.

The financial industry customarily uses such testing to help gauge investment risk and the adequacy of assets and evaluate internal processes and controls.

In recent years, regulators have also required financial institutions to carry out stress tests to ensure their capital holdings and other assets are adequate.

2. Regulatory/economic capital and stress testing frameworks for banks.

Stress testing should:

- Be consistent and repeatable
- Match the size, complexity and overall risk profile of the firm
- Incorporate multiple stress-testing approaches
- Be forward-looking and flexible
- Be clear, actionable, well supported and informative
- Include a commensurate model risk management framework
- Cover the full set of material exposures, activities and risks to which a bank is exposed

3. Enterprise risk management (ERM) techniques for banks

Key ideas for ERM:

a) Identification of Risks

b) Measurement of Risks

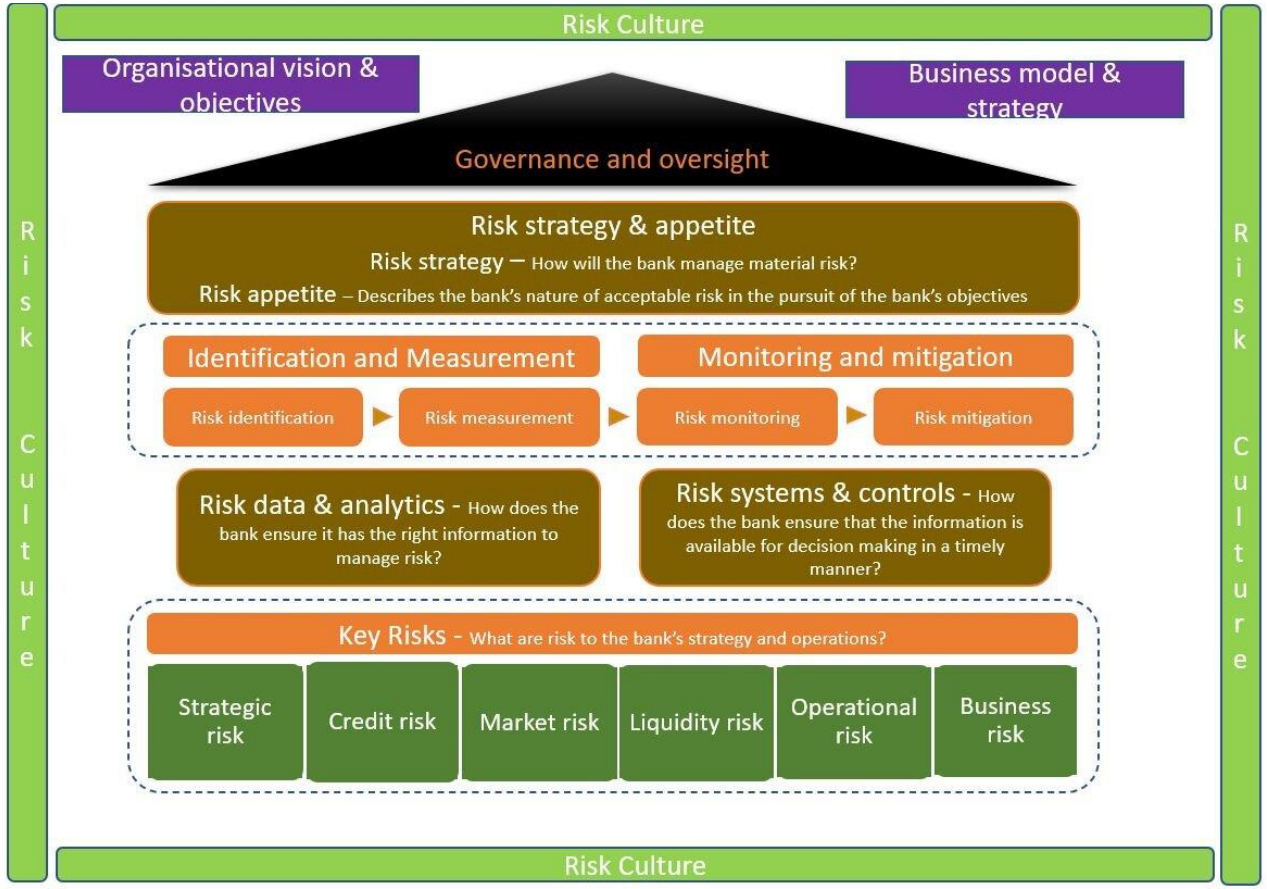
c) Mitigation of Risks

d) Monitoring of Risks

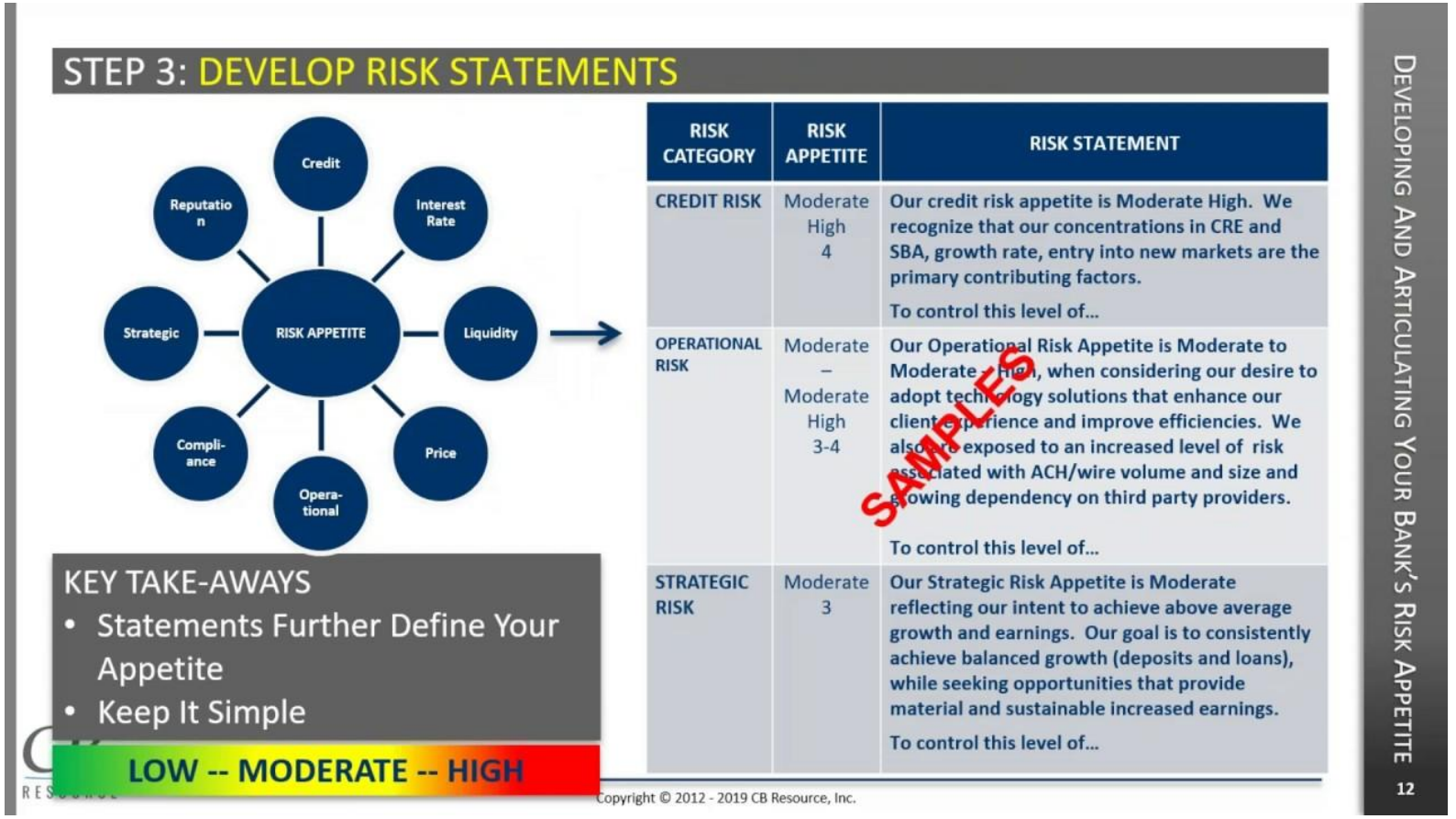
ERM is "2nd line of defense" (vs. business line and audit)

ERM fits within "GRC" (Governance, Risk and Compliance)

3. Enterprise risk management (ERM) techniques – Risk Framework



3. Enterprise risk management (ERM) techniques – Risk Appetite



3. Enterprise risk management (ERM) techniques – Risk Scoring

Risk - Scoring Results

	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	1	2	3	4	5
A. Almost Certain					
B. Likely					
C. Possible					
D. Unlikely					
E. Rare					

	Extreme Risk – Immediate Action where Senior Management get involved
	High Risk - Management Responsibility should be specified
	Moderate Risk - Managed by specific responsible person
	Low Risk – Managed by routine process

3. Banks' enterprise risk management (ERM) techniques

Actuaries and actuarial techniques can help to address:

a) Credit risk (as noted earlier) – a.k.a. “C1”

b) Insurance risk – a.k.a. “C2”

c) Interest rate risk via asset-liability management (ALM) – a.k.a. “C3”

d) Operational risk, including fraud risk (often “buried” in credit risk) – a.k.a. “C4”

e) Strategic risk

f) “Other” risks

3. Regulatory Supervision: Overlap Between Insurance and Banking (with a focus on Canada as a case study)

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Regulatory Supervision (Canada)

1. Role of the Office of the Superintendent of Financial Institutions (OSFI)
2. Division of sectors (Banks, Insurance Institutions)
3. Regulation vs. supervision
4. Commonality of approaches

KEY POINT: Similar regulatory approaches validate the need for similar skills!

4. IAA Guidance: Actuaries Preparing for Work in Banking

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IAA Guidance – Types of banking work for actuaries

- Credit scorecard development
- Credit risk management and reporting
- Design and pricing of banking products (credit- and non-credit-related)
- Customer and product profitability analysis
- Customer behaviour analytics
- Provision model development
- Balance sheet management (i.e., asset–liability mismatching, liquidity risk management)
- Pricing and trading of derivative products
- Capital modelling
- Credit, operational (including fraud analytics) and market risk modelling

IAA Guidance – Relevant skills and knowledge for actuaries in banking

- Quantitative and modelling skills, including asset–liability modelling
- Knowledge of the nature and pricing of financial and derivative products
- Business and regulatory awareness in the banking sector

5. Challenges for Actuaries in Banking

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Challenges for Actuaries in Banking

- No “instant recognition” in banking
- Poor promotion of actuarial skill sets by actuarial associations (SOA: 150 of 34,000 members)
- Banking-specialized education for actuaries is underdeveloped (exception: ASSA in South Africa)
  - Transferable knowledge must be self-identified
- Opportunities largely rest on individual rather than profession

6. The Society of Actuaries (SOA)

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Membership Growth

- Members located in 94 countries, candidates in more than 110
- 44% of our candidates are outside the United States
- Over 34,000 members worldwide

SOA Purpose Statement

The SOA empowers members to drive solutions to life's financial risks.

Strategic Plan

Key Themes

- Emphasize Education on Skills
- Accelerate International Growth
- Cultivate Community Experiences
- Spotlight Societal Purpose

Our Values

Integrity. Excellence. Curiosity.

Areas of Focus

Global

Pipeline
(Candidates to Members)

AI

Governance

Certificate Programs and Professional Development

International Financial Reporting for Insurers (IFRI)

Climate Risk

Ethical and Responsible Use of Data and Predictive Models

Predictive Analytics

soa.org/certificates

soa.org/pdopportunities

Our Research Arm

- Focus on socially relevant research and DEI
- Expand research tools to support education and professional development (Longevity Illustrators)
- Accelerate ability to perform international research
- Expand analysis of new datasets and services

soa.org/research-institute

The SOA's Affiliate Membership

- Free to join
- Open to all candidates, students and influencers
- No requirements to maintain membership
- No specific codes of conduct tied to the credentials

7. Questions & Answers (Q&A), if time permits

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Questions?


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