OLIVER WYMAN

MANAGING YOUR CAPTIVE WITH CAPITAL MODELING
2019 CASUALTY LOSS RESERVE SEMINAR

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- Daniel F. Gibson is a Principal and the Office Leader of the south region of Oliver Wyman Actuarial Consulting, Inc. and works out of Houston, Texas. Dan has more than 15 years of actuarial experience, including 10 years as a consulting actuary. His work includes servicing a wide array of clients, including specialty and multi-line insurance companies, reinsurance companies, self-insured entities, and captives.
- Prior to joining Oliver Wyman, Dan served as an actuary for a Bermuda-based mutual insurance company (OIL) and its reinsurance affiliate (OCIL) providing large insurance capacity to energy companies around the world. Dan provided various actuarial analytics to Senior Management and the Board of Directors including pricing, Dynamic Financial Analysis, cash flow analysis and risk management. Dan served on the Assumed Reinsurance Team and the Enterprise Risk Management Steering Committee, while coordinating input across several departments including Actuarial, Investment, Finance, Underwriting and Claims.
- Dan has leveraged his experience working as a commercial market actuary to help clients manage their increasingly complex and ever-changing insurance risks through various actuarial services. For example, Dan has helped domestic and multi-national clients with pricing, reserving, risk transfer, risk distribution and capital support.
- Dan is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries

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- Michael Atkinson is a Senior Consultant in the Houston, TX office of Oliver Wyman Actuarial Consulting, Inc. His primary responsibilities are to provide actuarial consulting services to a variety of public entities, insurance, reinsurance, captive and self-insured organizations. He serves as a consultant and provides risk financing guidance on actuarial assignments.
- Michael specializes in providing actuarial services in the following areas: Economic Capital Modeling; Pricing of unique risks such as wildfire; Estimates of unpaid loss & ALAE for all property & casualty exposures; Estimates of required collateral related to large deductible casualty insurance programs; Allocations of loss & ALAE to operating units.
- Prior to joining Oliver Wyman, Michael provided aviation engineering consulting services to various private clients and governmental agencies.
- Michael is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries

Table of Contents

Section I | Learning Objectives

Learning Objectives

This session will cover actuarial concepts pertaining to both captives and capital modeling. A strong background in either area is not necessary, as the ideas presented are at a high-level. Concepts that will be covered include:

1. Four key actuarial reports for captives
2. An introduction to economic capital modeling, what it is, and why it is important
3. Uncorrelated risks and the diversification benefit
4. The trade-off between capital and solvency
5. Point estimates and percentile estimates
6. Components of the capital model
7. Strategic uses of the capital model
8. A case study
9. ASOP No. 55

Section II | Actuarial Support to Captives

Actuarial Support to Captives

The growth of captives has drawn increased scrutiny from regulators and tax authorities. An independent actuarial team provides captives with actuarial support and analytics to substantiate the captive's actions, thereby allowing the captive to continue to provide value to the parent company. Below describes four key actuarial studies for consideration as part of the standard operations of the captive.

1. Loss Reserving

- Analysis of retained unpaid loss and LAE reserves, including IBNR
- Projections for the upcoming year based on historical results and projected exposures
- Statement of Actuarial Opinion

2. Pricing

- Pricing indication including reasonable range based on captive's historical experience supplemented with industry information
- Individual estimates for:
  - ✓ Expected loss
  - ✓ Required capital with return
  - ✓ Expense

3. Risk Transfer

- Review whether insurance program exposes captive to reasonable possibility of significant loss, specifically looking at:
  - ✓ 10-10 Test
  - ✓ ERD Test
  - ✓ Distribution of present value of captive's underwriting losses

4. Risk Distribution

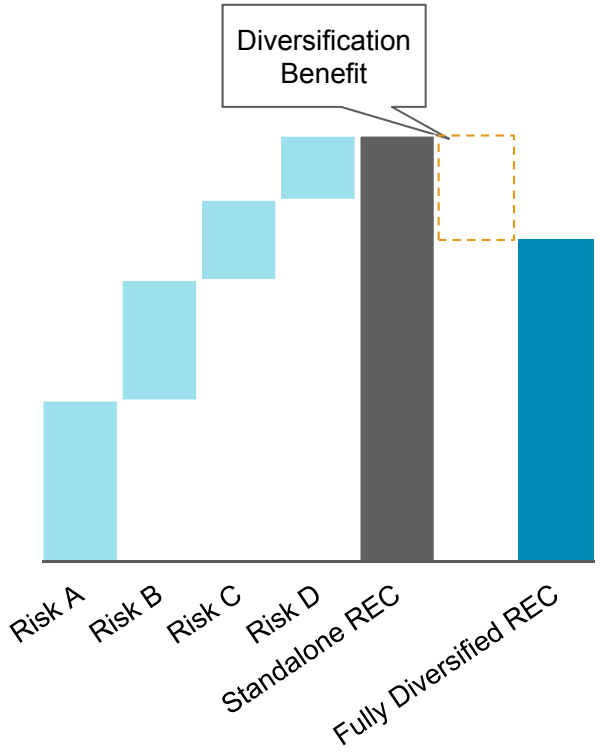
- Analyze and comment on:
  - ✓ Sufficient number of risks
  - ✓ Independence of risks
  - ✓ Applicability of law of large numbers
  - ✓ Is transaction viewed as insurance

Section III | Introduction to Economic Capital Modeling (ECM)

Introduction to Economic Capital Modeling
Quantifying Total Risk

Economic Capital represents the assets an entity must hold to buffer against insolvency in adverse scenarios and is the common currency for measuring enterprise risk at a defined confidence level or percentile.

Required Economic Capital (REC) by Risk

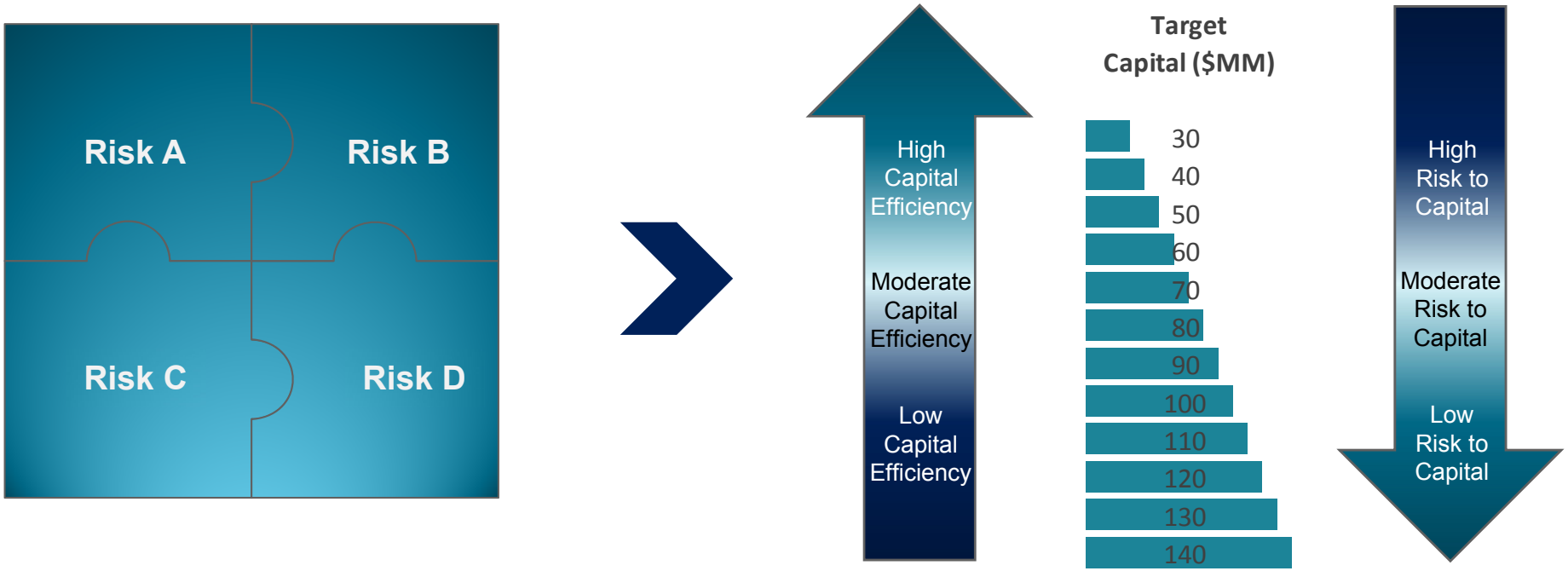


Benefits of Economic Capital Modeling

- Enhance understanding of total risk exposures and interactions
  - Uncorrelated risks make the enterprise exposure smaller than the sum of the parts
- Improve capital efficiency
  - Identifies opportunities to leverage underwriting strategy and reinsurance structure
- Strengthen enterprise risk strategy
  - Portfolio view leads to risk financing decisions consistent with enterprise risk tolerances

Quantification of financial risks provides clarification of key exposures to the organization

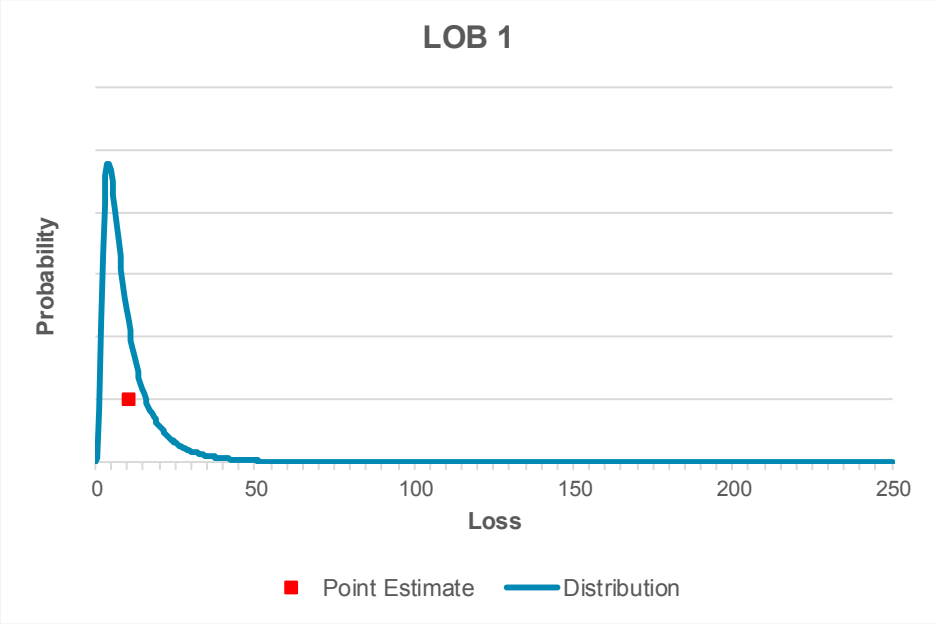
Introduction to Economic Capital Modeling
Fitting the Pieces Together to Achieve Capital Efficiency



Analyze core risks holistically – consider both individual risks and diversification benefits
As the target capital increases capital efficiency decreases offset by a reduced threat to insolvency

Introduction to Economic Capital Modeling
Quantifying the Range of Risk

Moving from a Point Estimate of Unpaid Claim Liabilities to Understanding the Range of Potential Outcomes



Percentile	Amount
60%	8.7
65%	9.7
70%	10.9
80%	14.2
85%	16.8
90%	20.6
95%	27.8
97%	33.8
99%	49.0
Expected	**10.0**

The expected value of unpaid claim liabilities falls at approximately the 65th percentile of the distribution.

10% probability that unpaid claim liabilities are more than 2x the actuarial point estimate.

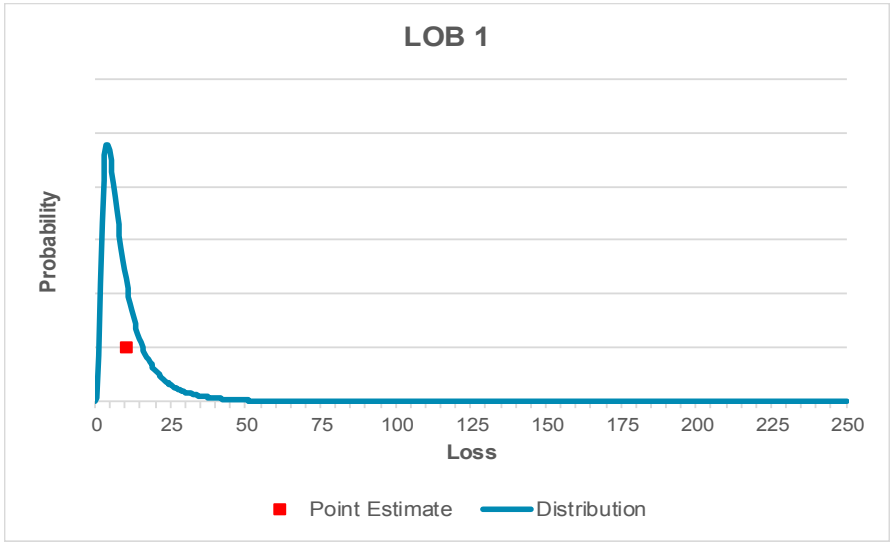
Approximately 1% probability that unpaid claim liabilities are almost 5x the actuarial point estimate.

- *Actuarial analyses typically derive a point estimate of unpaid claim liabilities that is intended to represent an expected value estimate.*
- *Traditional actuarial methods are designed to produce expected value estimates and don't provide insights into the range of potential outcomes.*

Capital modeling provides a mechanism to quantify potential variability

Introduction to Economic Capital Modeling
Quantifying the Diversification Effect

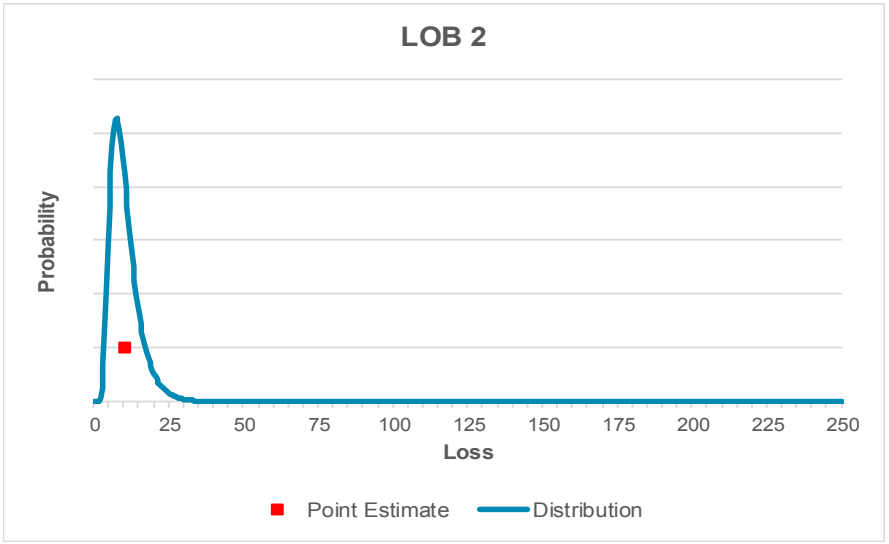
Aggregating Risk from non-Correlated Sources of Loss Reduces the Total Risk Profile



Percentile	Amount
60%	8.7
65%	9.7
70%	10.9
80%	14.2
85%	16.8
90%	20.6
95%	27.8
97%	33.8
99%	49.0
Expected	**10.0**

Volatility at 99th Percentile = 39.0

Both lines of business have an expected value of 10.0, but the volatility of the LOB1 unpaid claim liabilities is greater than that for LOB2.

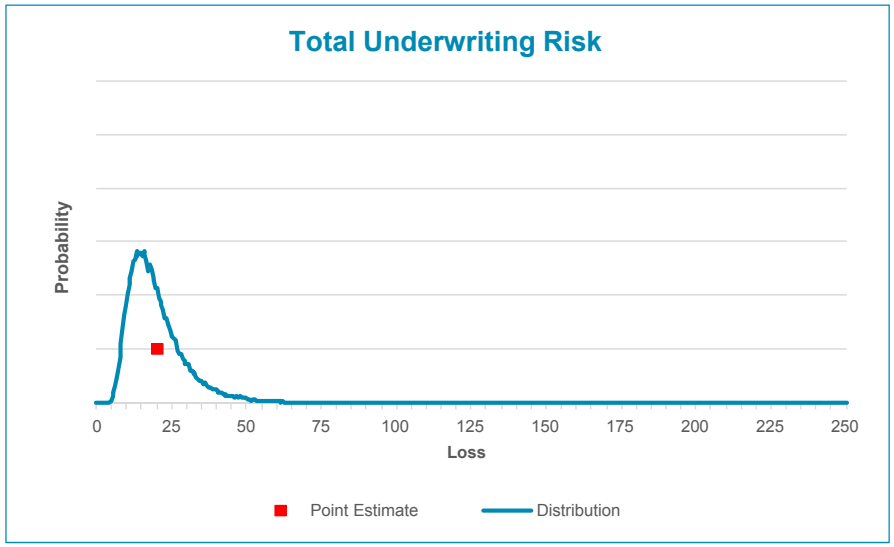


Percentile	Amount
60%	10.1
65%	10.7
70%	11.5
80%	13.3
85%	14.6
90%	16.4
95%	19.5
97%	21.7
99%	26.8
Expected	**10.0**

Volatility at 99th Percentile = 16.8

Introduction to Economic Capital Modeling
Quantifying the Diversification Effect

Aggregating Risk from non-Correlated Sources of Loss Reduces the Total Risk Profile



Percentile	Amount
60%	19.6
65%	20.9
70%	22.3
80%	26.0
85%	28.8
90%	32.6
95%	39.8
97%	45.8
99%	60.4
Expected	**20.0**

Volatility at 99th Percentile = 40.4

	Expected Value	99th Percentile	Required Capital
LOB 1	10.0	49.0	39.0
LOB 2	10.0	26.8	16.8
Sum	**20.0**	**75.8**	**55.8**
Total Risk	**20.0**	**60.4**	**40.4**
Diversification Benefit	0.0	15.4	15.4

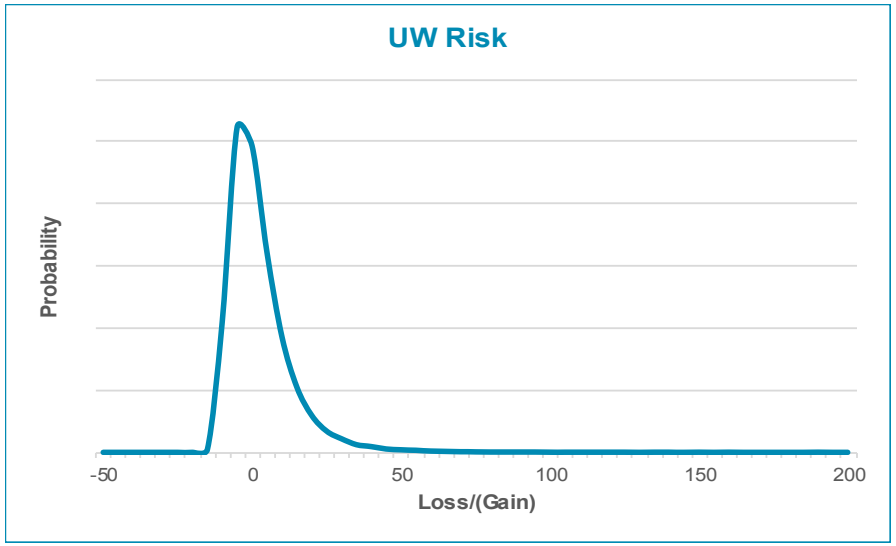
Assuming Required Capital based on Volatility at the 99th Percentile*

Total required capital for Underwriting Risk is less than the sum of the required capital for each LOB

*Note: 99th percentile shown for illustrative purposes only

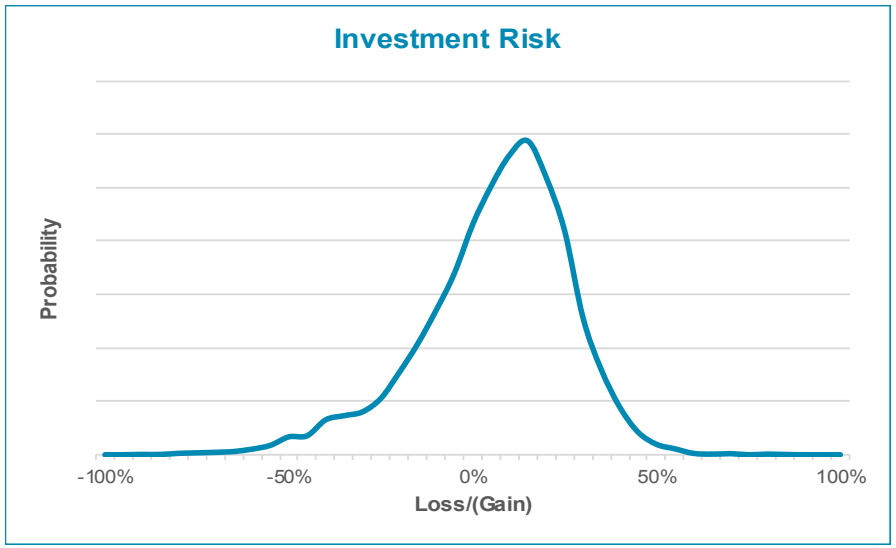
Introduction to Economic Capital Modeling
Analyzing Total Risk

Economic Capital Modeling Enables the Quantification of Total Risk and Efficient Capitalization



Percentile	Amount
60%	-0.4
65%	0.9
70%	2.3
80%	6.0
85%	8.7
90%	12.6
95%	19.8
97%	25.8
99%	40.4

Required Capital for Underwriting Risk at 99th Percentile: 40.4

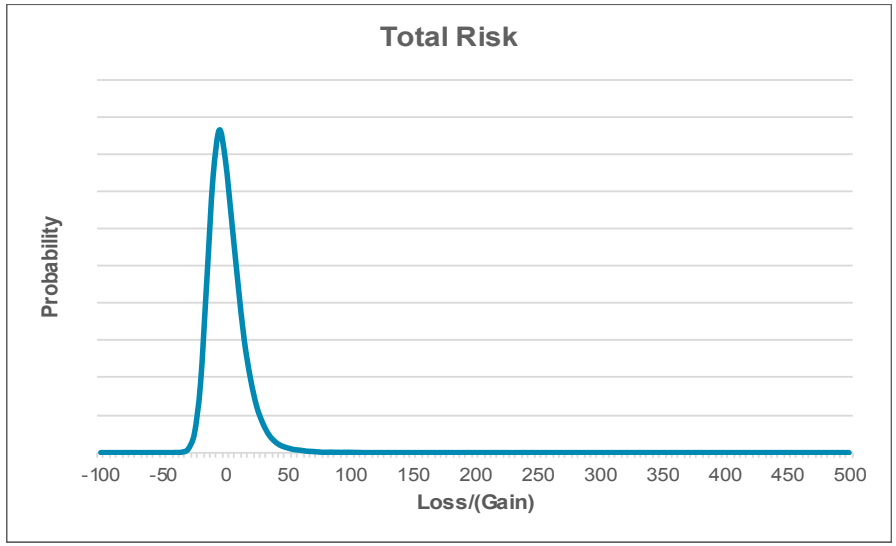


Percentile	Amount
60%	10.9%
65%	13.0%
70%	15.1%
80%	20.0%
85%	22.7%
90%	26.5%
95%	32.0%
97%	35.7%
99%	43.2%

Required Capital for Investment Risk at 99th Percentile: 18.7 (43.2% loss)

Introduction to Economic Capital Modeling
Analyzing Total Risk

Economic Capital Modeling Enables the Quantification of Total Risk and Efficient Capitalization



Percentile	Amount
60%	-0.6
65%	1.2
70%	3.2
80%	8.0
85%	11.3
90%	15.8
95%	23.3
97%	28.9
99%	43.3

Required Capital After adding Investment Risk at 99th Percentile: 43.3

- *Considering diversification reduces required capital by 15.8 (in this example)*
- *Based on results of ECM*
- *Assumes no correlation between investment returns and UW results*

Total required capital at the 99th percentile* is less than the sum of UW Risk and Investment Risk

*Note: 99th percentile shown for illustrative purposes only

Section IV | ECM Process Overview

ECM Process Overview

1

Future Claims / Underwriting Risk

- Simulate the ultimate value of claims expected to occur in prospective policy periods

2

Reported Claims / Reserve Risk

- Simulate the unpaid liability for claims that have already occurred

3

Investment Income / Asset Risk

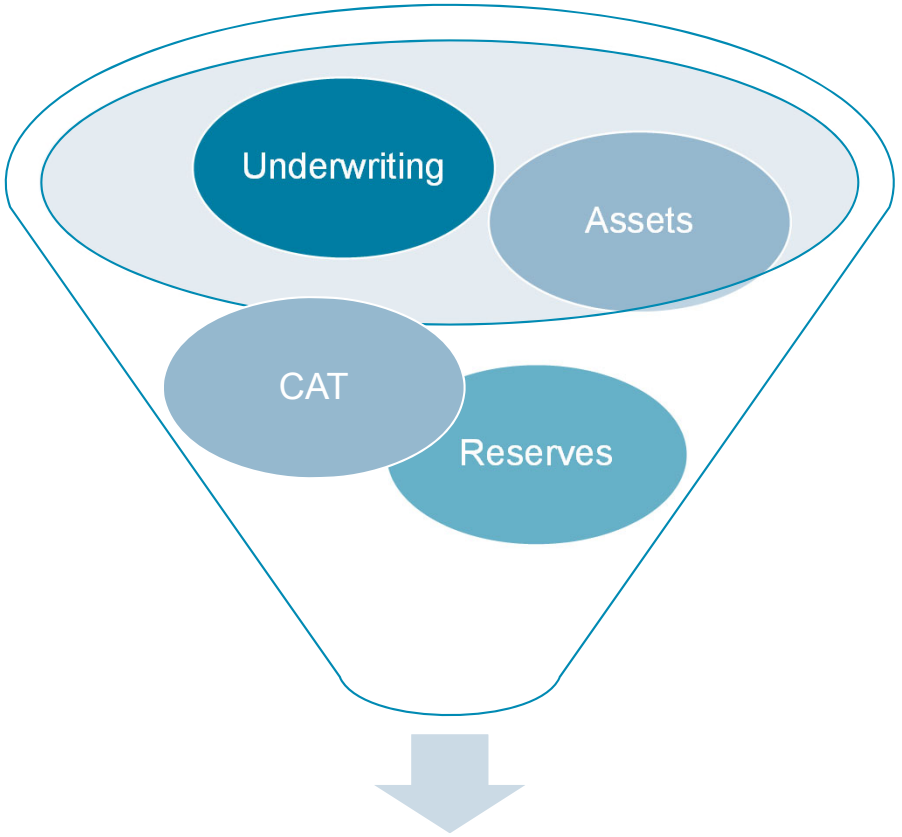
- Simulate investment income generated in each prospective fiscal year

4

Catastrophe Losses / CAT Risk

- Simulate future catastrophe losses based on cat modeling event sets

The four key risk components are combined in the full capital risk model



Financials

Project expected Balance Sheet and Income Statement as of each financial statement date across multi-year horizon

ECM Process Overview
Example of Output from Model

Interpreting Results

- The starting capital values in the first column are hypothetical values; the probability of capital depletion increases as the starting capital value decreases
- If the starting capital value is $90 million, then the risk of depletion after 3 years is 1.00% based on the model results
- Model results indicate that based on the captive's current capital structure, it would need $90 million of capital to ensure solvency at the 99th percentile in 3 years

Capital Model: Probability of Capital Depletion

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
45,000,000	81.55%	84.63%	86.28%
50,000,000	66.38%	70.98%	74.12%
55,000,000	47.60%	53.51%	57.48%
60,000,000	30.44%	31.54%	33.54%
65,000,000	17.14%	18.99%	21.62%
70,000,000	9.19%	10.48%	12.73%
75,000,000	4.25%	5.54%	7.43%
80,000,000	1.75%	2.67%	4.01%
85,000,000	0.64%	1.22%	1.96%
90,000,000	0.24%	0.49%	1.00%
95,000,000	0.06%	0.18%	0.42%
100,000,000	0.02%	0.06%	0.18%
105,000,000	0.00%	0.02%	0.10%

The model can be re-run to help facilitate strategic discussions by providing estimates to the impact on solvency estimates based on various capital levels

Section V | Applications & Strategies

Applications & Strategies

1. **Target Capital**
   - Assess fiscally sound level of capital for both the short-term and long-term
   - Understand expected amount of change in net position over the next 3 to 5 year period
2. **Risk Management**
   - Establish risk tolerances based on variability in the balance sheet
   - Optimize underwriting strategy and reinsurance structure within tolerances
3. **Capital Depletion**
   - Identify characteristics of scenarios that could deplete the current capital
   - Quantify contribution of each risk component to the downside
4. **Asset Allocation**
   - Test various investment strategies
   - Evaluate reinvestment strategies that could be employed to minimize liquidity concerns
5. **Opportunity Cost**
   - Structure insurance/reinsurance to optimize capital
   - Determine opportunity cost of retaining insurance risk vs. borrowing capital from commercial market

A capital model provides a more holistic look at risk to help facilitate strategic discussions

Section VI | ECM Case Study

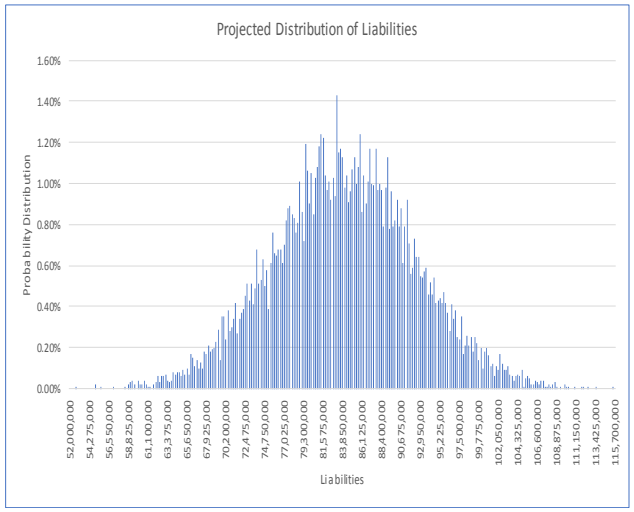
ECM Case Study
Introduction

- Company established a captive to offer persistent capacity and consistent pricing of its Casualty program to its parent
- Captive insures Casualty risks below $5 million per occurrence retention
- Captive currently is not using reinsurance
- Captive maintains capital at the 99th percentile solvency criteria at 3 years
- Historically, parent company purchased CAT coverage in the commercial market, but capacity constraints and price increases have led to consideration of placing in the captive
- Commercial market currently offering policy $100 million excess $400 million at 20% rate-on-line.
- What is the capital impact of writing CAT policy though captive?

A capital model can help by quantifying the impact of adding CAT risk to the captive

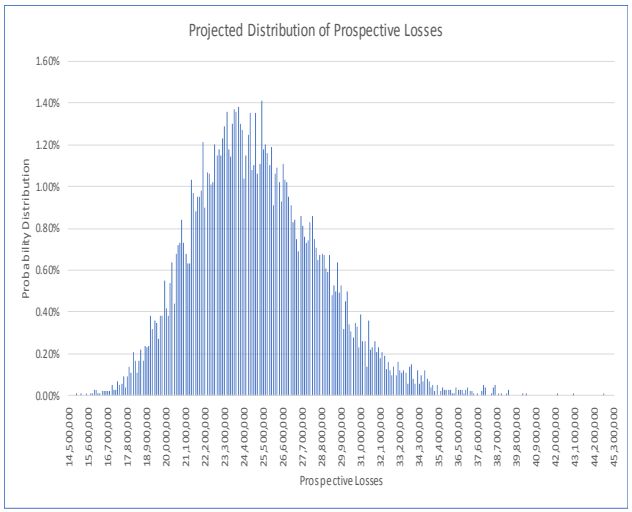
ECM Case Study
Inputs to Model – Casualty Portfolio

The model incorporates Reserve Risk, Underwriting Risk, and Asset Risk and simulates capital position over 3-year horizon



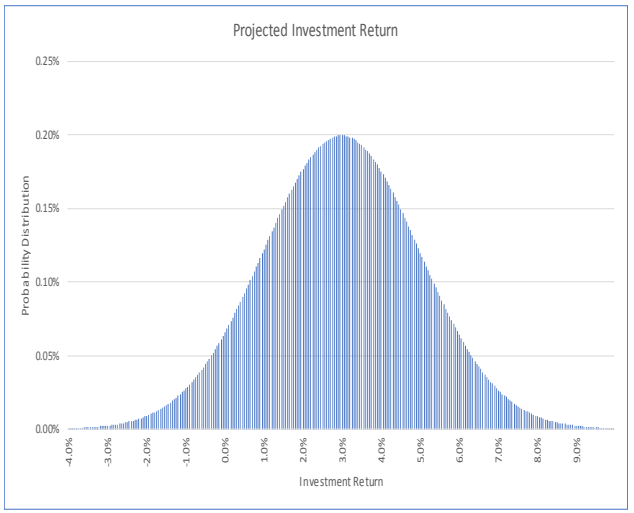
Reported Claims / Reserve Risk

- $100 million in reserves for claims that have already occurred, projected to pay out over 20 years
- Model introduces variability in reserve development from year to year



Future Claims / Underwriting Risk

- Expected losses of $30 million in prospective policy
- Model simulates the ultimate value of claims expected to occur in prospective policy periods, based on underlying loss distribution



Investment Income / Asset Risk

- Investment portfolio of $130 million, earning investment income at rate of 3%

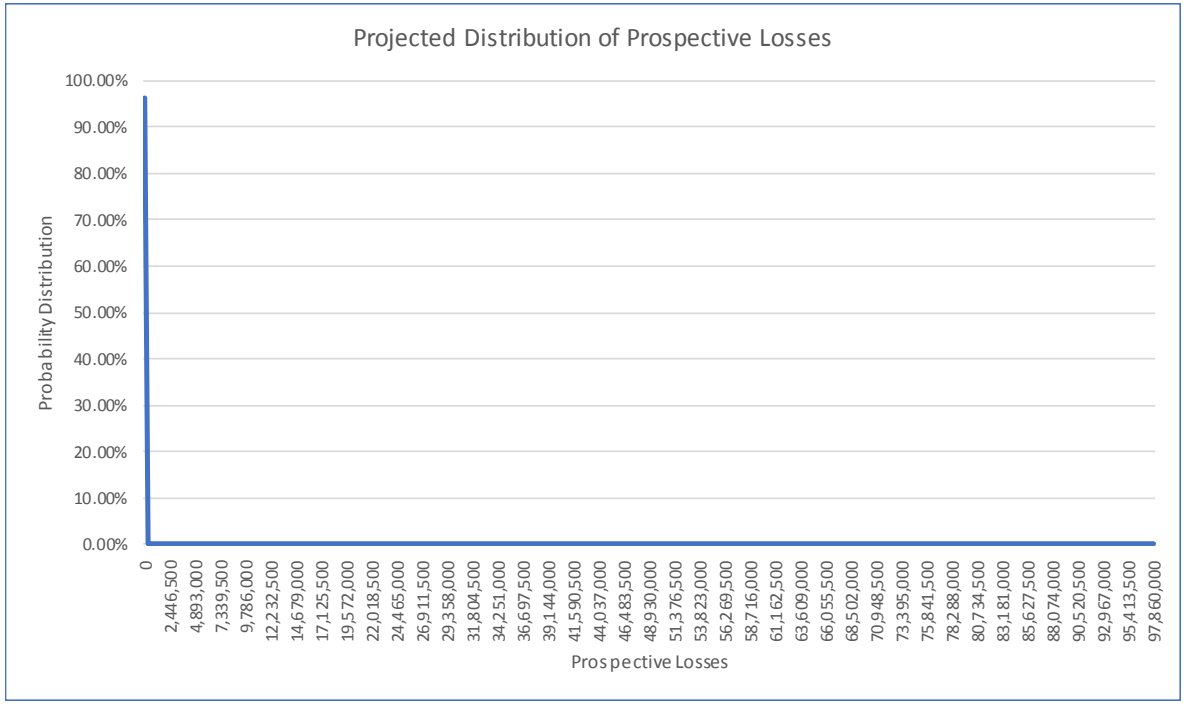
ECM Case Study
Results – Probability of Surplus Depletion (Casualty Portfolio)

Capital Model: Probability of Capital Depletion

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.91%	99.93%	99.93%
105,000,000	99.31%	99.46%	99.53%
110,000,000	97.16%	97.69%	97.99%
115,000,000	92.06%	93.41%	94.10%
120,000,000	81.55%	84.63%	86.28%
125,000,000	66.38%	70.98%	74.12%
135,000,000	30.44%	31.54%	33.54%
145,000,000	9.19%	10.48%	12.73%
155,000,000	1.75%	2.67%	4.01%
165,000,000	0.24%	0.49%	1.00%
172,500,000	0.03%	0.12%	0.30%
180,000,000	0.00%	0.02%	0.10%
187,500,000	0.00%	0.00%	0.01%

The captive requires $165.0 million of capital to ensure solvency at the 99th percentile in 3 years

ECM Case Study
Inputs to Model – Adding CAT to the Captive



Future Claims / Underwriting Risk

- The captive will cover the $100 million excess $400 million layer of CAT losses
- CAT loss distribution developed based on frequency / severity model reflecting industry and company information
- Expected losses of $3.25 million in prospective policy
- Over 95% probability of $0 loss with less than 5% probability of a full limit loss ($100 million)

ECM Case Study
Results – Probability of Surplus Depletion (Adding CAT Risk)

Capital Model: Probability of Surplus Depletion Casualty Portfolio

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.91%	99.93%	99.93%
105,000,000	99.31%	99.46%	99.53%
110,000,000	97.16%	97.69%	97.99%
115,000,000	92.06%	93.41%	94.10%
120,000,000	81.55%	84.63%	86.28%
125,000,000	66.38%	70.98%	74.12%
135,000,000	30.44%	31.54%	33.54%
145,000,000	9.19%	10.48%	12.73%
155,000,000	1.75%	2.67%	4.01%
165,000,000	0.24%	0.49%	1.00%
172,500,000	0.03%	0.12%	0.30%
180,000,000	0.00%	0.02%	0.10%
187,500,000	0.00%	0.00%	0.01%

Capital Model: Probability of Surplus Depletion Casualty and CAT Portfolio

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.91%	99.93%	99.93%
105,000,000	99.35%	99.50%	99.57%
110,000,000	97.28%	97.80%	98.09%
115,000,000	92.37%	93.69%	94.35%
120,000,000	82.13%	85.16%	86.75%
125,000,000	67.51%	71.96%	75.06%
140,000,000	20.11%	21.86%	24.45%
155,000,000	5.16%	6.12%	7.39%
170,000,000	3.46%	3.56%	3.77%
236,000,000	0.92%	0.93%	1.00%
240,000,000	0.56%	0.64%	0.69%
260,000,000	0.03%	0.03%	0.06%
280,000,000	0.00%	0.00%	0.01%

Adding CAT to the captive would require $71.0 million of additional capital to maintain probability of solvency in 3 years at 99th percentile

ECM Case Study
CAT Decision

Insurance options:

- **Option 1: Purchase CAT policy from commercial market (20% rate-on-line)**
- **Option 2: Underwrite 100% of CAT through captive (10% rate-on-line)**

Cost Item	Option 1	Option 2	Cost / (Savings)
Casualty Premium (captive)	35,000,000	35,000,000	0
Cat Premium (commercial market)	20,000,000	0	(20,000,000)
Cat Premium (captive)	0	10,000,000	10,000,000
Total Premium	**55,000,000**	**45,000,000**	**(10,000,000)**
Required Capital	165,000,000	236,000,000	71,000,000
Opportunity Cost (= 10% - 3%)*	7%	7%	
Cost of Capital	**11,550,000**	**16,520,000**	**4,970,000**
TOTAL INSURANCE COST	**66,550,000**	**61,520,000**	**(5,030,000)**

A capital model provides insight beyond premium cost comparisons to help organizations make decisions that reflect the total insurance cost including volatility and the opportunity cost of capital

*Note: Assumes the parent's return is 10% and the investment return is 3%

Section VII

ECM Case Study Additional Scenarios

ECM Case Study – Additional Scenarios
Results – Probability of Surplus Depletion (Partially Reinsure CAT)

Capital Model: Probability of Surplus Depletion Casualty Portfolio

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.91%	99.93%	99.93%
105,000,000	99.31%	99.46%	99.53%
110,000,000	97.16%	97.69%	97.99%
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165,000,000	0.24%	0.49%	1.00%
172,500,000	0.03%	0.12%	0.30%
180,000,000	0.00%	0.02%	0.10%
187,500,000	0.00%	0.00%	0.01%

Capital Model: Probability of Surplus Depletion Casualty and CAT Portfolio – 50% Quota Share

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.91%	99.93%	99.93%
105,000,000	99.35%	99.50%	99.57%
110,000,000	97.27%	97.80%	98.09%
115,000,000	92.36%	93.69%	94.35%
120,000,000	82.12%	85.15%	86.74%
125,000,000	67.50%	71.95%	75.05%
140,000,000	20.09%	21.82%	24.41%
155,000,000	5.08%	5.99%	7.26%
170,000,000	3.22%	3.29%	3.48%
200,500,000	0.87%	0.89%	1.00%
210,000,000	0.24%	0.29%	0.31%
225,000,000	0.02%	0.02%	0.05%
240,000,000	0.00%	0.00%	0.01%

Including a 50% quota share for CAT risk would require $35.5 million of additional capital to maintain probability of solvency in 3 years at 99th percentile

ECM Case Study – Additional Scenarios
Partially Reinsure CAT

Insurance options:

- **Option 1: Purchase CAT policy from commercial market (20% rate-on-line)**
- **Option 3: Underwrite CAT in captive and reinsure with 50% quota share**

Cost Item	Option 1	Option 3	Cost / (Savings)
Casualty Premium (captive)	35,000,000	35,000,000	0
Cat Premium (commercial market)	20,000,000	10,000,000	(10,000,000)
Cat Premium (captive)	0	5,000,000	5,000,000
Total Premium	**55,000,000**	**50,000,000**	**(5,000,000)**
Required Capital	165,000,000	200,500,000	35,500,000
Opportunity Cost (= 10% - 3%)*	7%	7%	
Cost of Capital	**11,550,000**	**14,035,000**	**2,485,000**
TOTAL INSURANCE COST	**66,550,000**	**64,035,000**	**(2,515,000)**

*Note: Assumes the parent's return is 10% and the investment return is 3%

ECM Case Study – Additional Scenarios
Results – Probability of Surplus Depletion (With Investment Portfolio)

Capital Model: Probability of Surplus Depletion Casualty Portfolio

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.91%	99.93%	99.93%
105,000,000	99.31%	99.46%	99.53%
110,000,000	97.16%	97.69%	97.99%
115,000,000	92.06%	93.41%	94.10%
120,000,000	81.55%	84.63%	86.28%
125,000,000	66.38%	70.98%	74.12%
135,000,000	30.44%	31.54%	33.54%
145,000,000	9.19%	10.48%	12.73%
155,000,000	1.75%	2.67%	4.01%
165,000,000	0.24%	0.49%	1.00%
172,500,000	0.03%	0.12%	0.30%
180,000,000	0.00%	0.02%	0.10%
187,500,000	0.00%	0.00%	0.01%

Capital Model: Probability of Surplus Depletion With Investment Portfolio and 50% Quota Share

Starting Capital Level	One-Year Probability of Capital Depletion	Two-Year Probability of Capital Depletion	Three-Year Probability of Capital Depletion
100,000,000	99.17%	99.34%	99.45%
105,000,000	97.57%	98.07%	98.28%
110,000,000	93.54%	94.70%	95.17%
115,000,000	85.81%	88.09%	89.17%
120,000,000	74.29%	78.34%	80.03%
125,000,000	59.53%	64.92%	67.29%
140,000,000	18.74%	19.10%	19.57%
155,000,000	5.12%	5.98%	6.80%
170,000,000	3.22%	3.22%	3.39%
197,700,000	1.05%	1.00%	1.00%
210,000,000	0.23%	0.35%	0.43%
225,000,000	0.03%	0.03%	0.07%
240,000,000	0.00%	0.00%	0.01%

An investment portfolio with a 50% quota share for CAT risk would require $32.7 million of additional capital to maintain probability of solvency in 3 years at 99th percentile

ECM Case Study – Additional Scenarios
With Investment Portfolio

Insurance options:

- **Option 1: Purchase CAT policy from commercial market (20% rate-on-line)**
- **Option 4: Investment portfolio; underwrite CAT in captive and reinsure with 50% quota share**

Cost Item	Option 1	Option 4	Cost / (Savings)
Casualty Premium (captive)	35,000,000	35,000,000	0
Cat Premium (commercial market)	20,000,000	10,000,000	(10,000,000)
Cat Premium (captive)	0	5,000,000	5,000,000
Total Premium	**55,000,000**	**50,000,000**	**(5,000,000)**
Required Capital	165,000,000	197,700,000	32,700,000
Opportunity Cost (= 10% - Inv.%)*	7%	5%	
Cost of Capital	**11,550,000**	**9,885,000**	**(1,665,000)**
TOTAL INSURANCE COST	**66,550,000**	**59,885,000**	**(6,665,000)**

Investing in stocks instead of holding cash reduces the cost of capital:
The required capital is less, and the opportunity cost (5%) is less due to greater investment returns.

*Note: Assumes the investment return is 3% and 5% for Option 1 and Option 4, respectively

ECM Case Study – Additional Scenarios
Assuming Higher Parent Return (15%)

Insurance options:

- **Option 1: Purchase CAT policy from commercial market (20% rate-on-line)**
- **Option 4: Investment portfolio; underwrite CAT in captive and reinsure with 50% quota share**

Cost Item	Option 1	Option 4	Cost / (Savings)
Casualty Premium (captive)	35,000,000	35,000,000	0
Cat Premium (commercial market)	20,000,000	10,000,000	(10,000,000)
Cat Premium (captive)	0	5,000,000	5,000,000
Total Premium	**55,000,000**	**50,000,000**	**(5,000,000)**
Required Capital	165,000,000	197,700,000	32,700,000
Opportunity Cost (= Parent% - Inv.%)*	7%	10%	
Cost of Capital	**11,550,000**	**19,770,000**	**8,220,000**
TOTAL INSURANCE COST	**66,550,000**	**69,770,000**	**3,220,000**

The cost of capital increases as the parent return increases, resulting in higher total costs compared to insuring through commercial market.

*Note: Parent return is 10% and 15% for Option 1 and Option 4, respectively. Investment return is 3% and 5% for Option 1 and Option 4, respectively.

Section VIII | ASOP No. 55

ASOP No. 55 – Capital Adequacy Assessment

The Actuarial Standards Board voted to adopt ASOP No. 55 - Capital Adequacy Assessment in June 2019, with an effective date of November 1, 2019. The following is an excerpt from the ASOP.

Purpose: This actuarial standard of practice (ASOP or standard) provides guidance to actuaries when performing professional services with respect to an evaluation of the resiliency of an insurer through a **capital adequacy assessment**.

Scope: This standard applies to actuaries involved in **capital adequacy assessment** work for life or health insurers (including fraternal benefit societies and health benefit plans), property and casualty insurers, mortgage and title insurers, financial guaranty insurance companies, risk retention groups, public entity pools, **captive insurers**, and similar entities or a combination of such entities, when affiliated (collectively, referred to as "insurer"). The term insurer includes entities that insure or reinsure any entity mentioned in the preceding sentence. For the purposes of this standard, if an actuary is asked to assess the **capital** needed to support self-insured obligations of the types of insurance written by the businesses listed in the first sentence, the term "insurer" includes such self-insured obligations.

This standard applies to actuaries **designing, performing, or reviewing** a capital adequacy assessment.

ASOP No. 55 – Capital Adequacy Assessment

Additional Sections from ASOP No. 55:

Section 3. Analysis of Issues and Recommended Practices

- 3.1 General Considerations
- 3.2 Additional General Considerations
- 3.3 Valuation Bases Underlying a Capital Adequacy Assessment
- 3.4 Risk Capital Target or Risk Capital Threshold
- 3.5 Additional Considerations Regarding Risk Capital Target or Risk Capital Threshold
- 3.6 Scenario Tests and Stress Tests
  - 3.6.1 Types of Tests
  - 3.6.2 Level of Adversity
  - 3.6.3 Sensitivity Testing
- 3.7 Incorporating Management Actions
- 3.8 Insurers That Operate under More Than One Regulatory Regime
- 3.9 Additional Considerations Regarding Insurers That Are Part of a Group
- 3.10 Reliance on Data or Other Information Supplied by Others
- 3.11 Documentation

Section 4. Communications and Disclosures

- 4.1 Required Disclosures in an Actuarial Report
- 4.2 Additional Disclosures in an Actuarial Report

Managing your Captive with Capital Modeling

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