

TxCIA
Texas Captive Insurance Association
2025 Annual Conference

Risk Pricing and Capital Modeling



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Risk Pricing & Capital Modeling

Objectives and Agenda



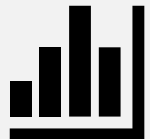
Objectives



Explain technical actuarial pricing fundamentals for captives



Clarify tax-focused (transfer pricing) and evidence needs



Demonstrate capital modeling and governance for solvency and strategy

Agenda

- Welcome & Objectives
- Actuarial pricing essentials
- Tax & transfer pricing perspective
- Capital modeling & solvency
- Integrated case study
- Q&A

Risk Pricing & Capital Modeling

Why This Matters to You



Optimize Cost of Risk

Accurate pricing + reinsurance choices free capital for core business



Preserve Tax Benefits

Premium and documentation drive tax deductibility



Ensure Solvency

Capital modeling quantifies tail risk and claims-paying ability



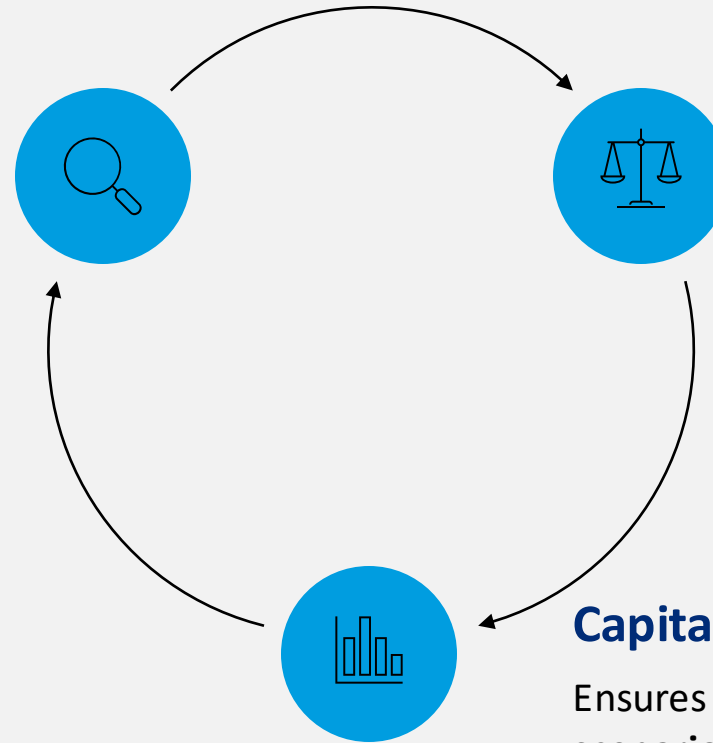
Risk Pricing & Capital Modeling

Interplay: Pricing -> Tax -> Capital



Actuarial Pricing

Charge **commercially credible premiums** that cover expected loss & expense



Transfer Pricing

Demonstrate **risk shifting / distribution** and operating under the **common notions of insurance** so the captive is treated as an insurance company for tax purposes

Capital Modeling

Ensures the captive can **survive adverse scenarios** while meeting the parent risk-appetite targets

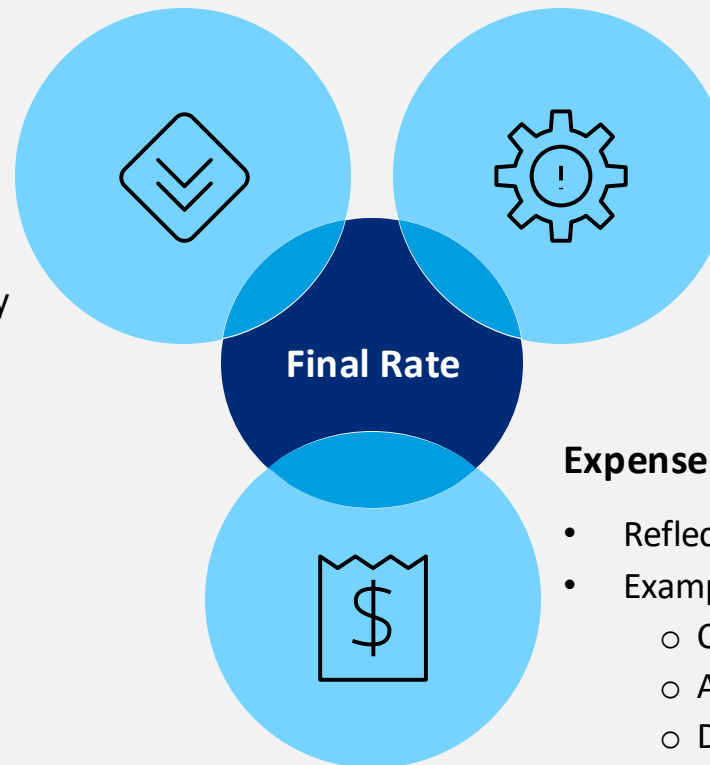
Risk Pricing & Capital Modeling

Key Components of Actuarial Pricing & Rate Determination



Expected Losses

- Based on historical data and industry trends, adjusted for geography and coverage specifics
- Approaches used include
 - Traditional actuarial methods
 - Loss modeling for CATs



Risk Margin

- Ensures premiums cover the cost of adverse deviations from expected losses
- Protects solvency and aligns pricing with the insurer's risk appetite and capital targets
- Considers reasonable capital for underwritten risks and return

Expense Load

- Reflects actual captive expenses
- Examples include:
 - Captive management fees
 - Actuarial fees
 - Domicile fees, including taxes
 - Reinsurance costs

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Why Actuarial Pricing is Essential for Captive Success



Premiums that match loss cost, not market cycles

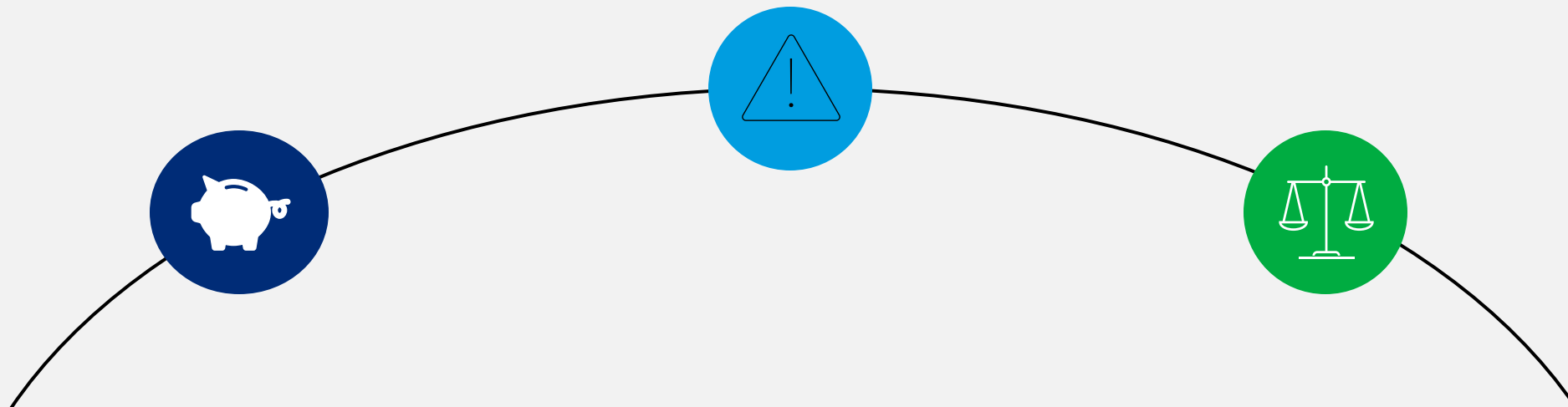
Balances cost and volatility

Early warning for deteriorating loss experience

Provides a forward-looking view to
detect frequency and severity
changes earlier

Documented arm's-length methodology

Ensures premiums are reasonable,
avoiding excess or inadequacy—key
for tax and transfer pricing



Actuarial – Risk Pricing & Capital Modeling

Tax Overview



To qualify as an insurance company for US federal tax purposes, more than 50% of the Captive's business must be from:

- Issuing of insurance or annuity contracts or
- Reinsuring or risks underwritten by another insurance company

Separately, a Captive must meet the four pillars of the insurance tax qualification:

Existence of insurance / insurable risks

- Insured risk would be otherwise insurable outside of the MNE group

Meet risk diversification requirements

- Diversification and pooling of risk

Meet risk shifting requirements

- Captive has the real possibility of suffering losses

Operate under the "commonly accepted notions" of insurance

- Operates like an insurance company
- Arm's length terms and conditions & premium

Risk Pricing & Capital Modeling

Assessing if the captive operates under common notions of insurance



Risk-Based Pricing

Premiums should accurately reflect the risk assumed.

Market Comparability

Supporting evidence includes actuarial analysis supplemented by market comparables between unrelated parties.

Comparable market rates, LOB considerations, and industry ratios like premium to surplus are vital for assessing arm's length premiums.

Documentation

Contract terms must be documented and consistent with third party terms and conditions.

Premium Allocation

Allocation of premiums across benefiting entities.



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Capital Modeling – Determining the Optimal Capital Level



Where strategy meets analytics:



Quantifies how much capital the captive needs to remain solvent across adverse scenarios



Supports decisions on retention levels, reinsurance, asset allocations, and more

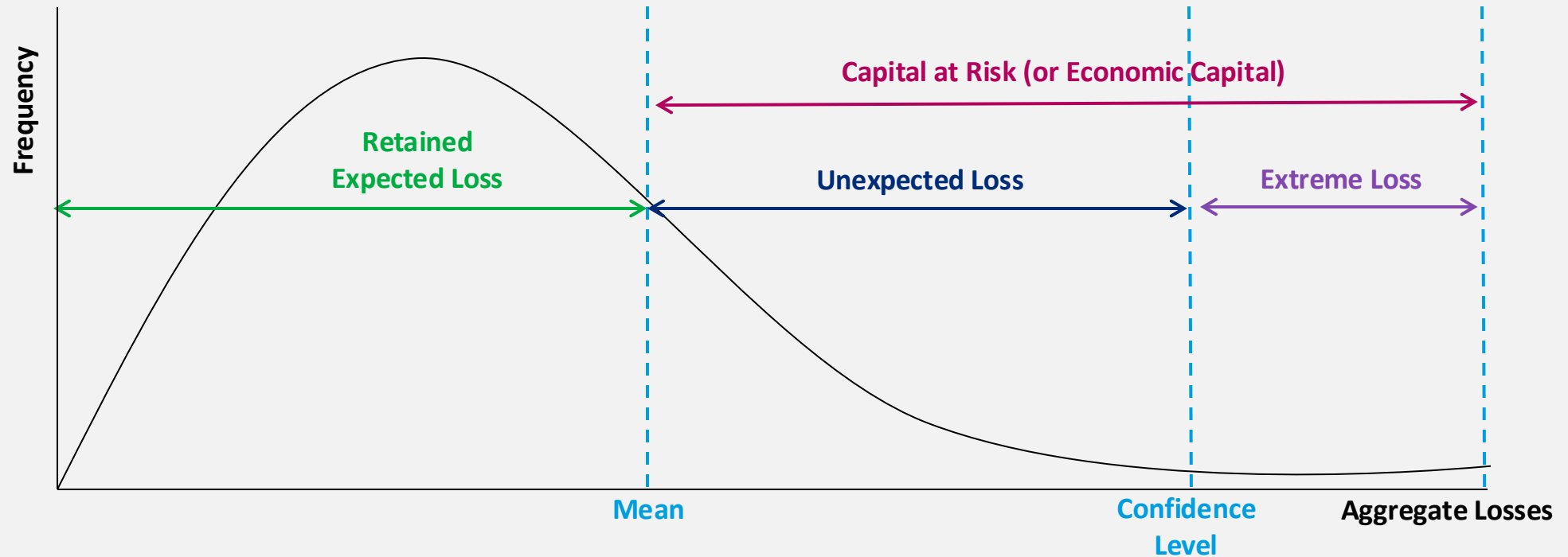


Informs regulatory and rating agency discussions



Risk Pricing & Capital Modeling

Capital Modeling – Economic Capital



ECONOMIC CAPITAL REPRESENTS THE CAPITAL REQUIRED TO COVER UNEXPECTED LOSSES, ENSURING FINANCIAL STABILITY

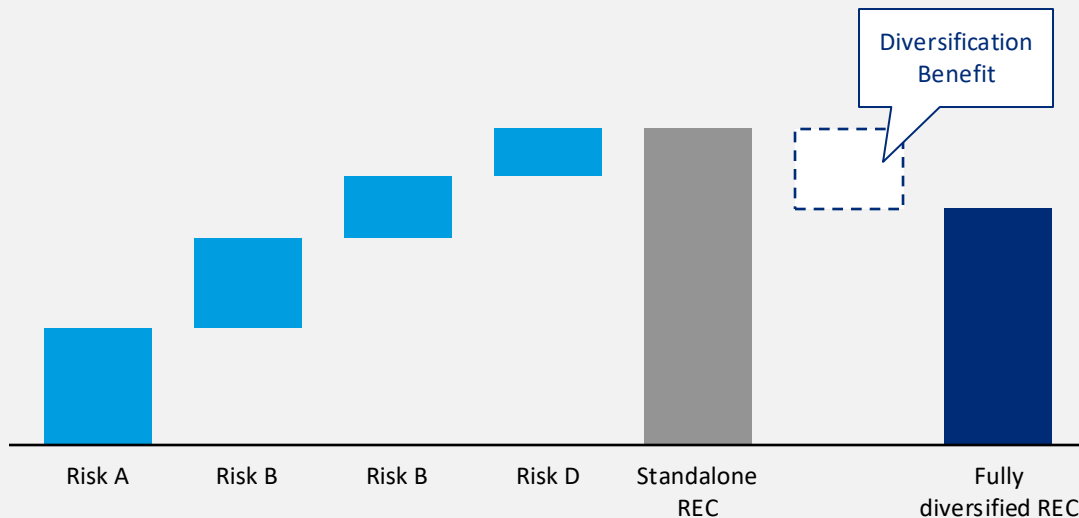
Risk Pricing & Capital Modeling

Unlocking Value Through Economic Capital Modeling



Visualizing Required Economic Capital (REC) by Risk Type

- **Capital** cushion needed to cover **retained** loss **volatility**
- Leverage **diversification** to reduce overall capital needs



Benefits of Economic Capital Modeling

- Gain a **holistic view** of total risk **exposures** and their interactions
- Maximize **capital efficiency**
- Strengthen enterprise risk **strategy**
- Identify **key drivers** of investment performance and liability interaction

QUANTIFICATION OF FINANCIAL RISKS PROVIDES CLARIFICATION OF KEY EXPOSURES TO THE ORGANIZATION

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Capital Modeling – Holistic and Diversified View of Risk



Underwriting Risk

Ultimate value of claims to occur in prospective policy periods

Reserve Risk

Unpaid claim liability claims that have already occurred

Asset Risk

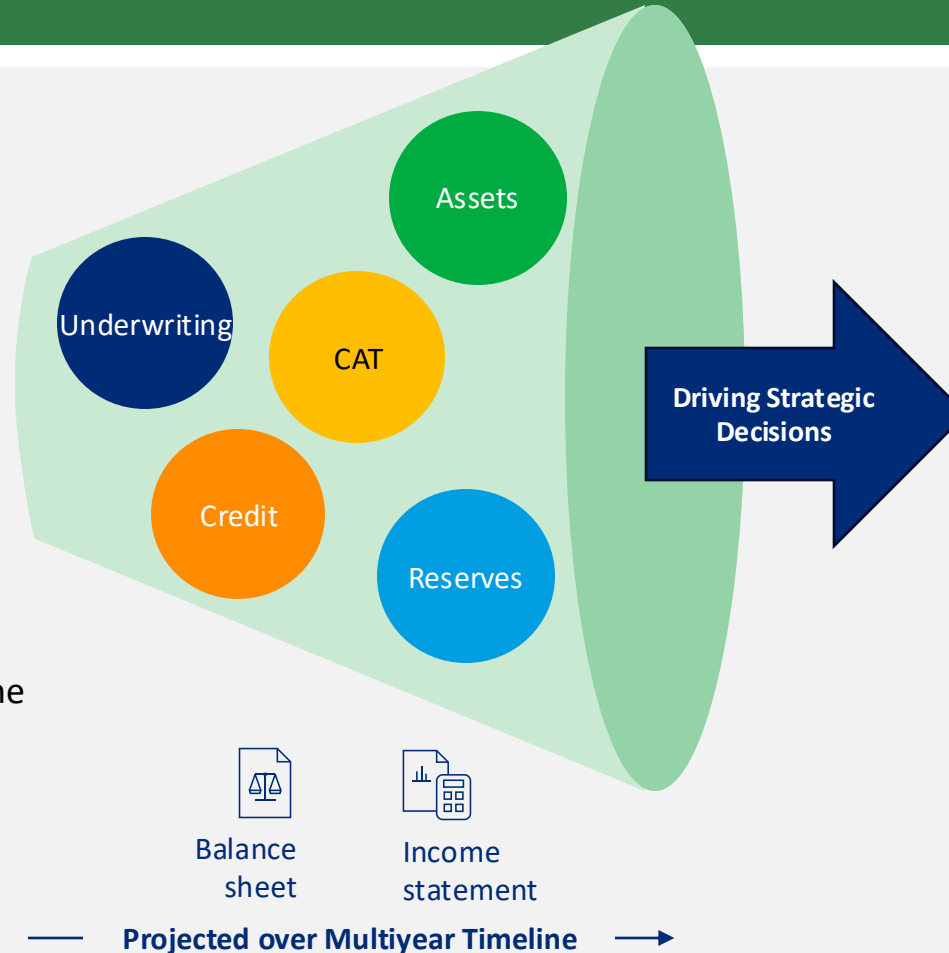
Investment income generated in each prospective year

Catastrophe Risk

Future CAT losses based on catastrophe modeling results

Credit Risk

Reinsurer default scenarios and associated uncollectible amounts



Driving Strategic
Decisions

THINKING STRATEGICALLY



Target Capital



Opportunity Cost



Risk Management



Capital Depletion



Asset Allocation

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Case Study – Scenario Overview



Lone Star Manufacturing Captive

- Texas-based manufacturing parent forms a single-parent captive
- Lines of business: General Liability, Property, and Workers' Compensation (WC)
- Program structure (illustrative):
 - Retention: GL \$1M xs \$250k; Property \$5M xs \$1M; WC deductible \$500k.
 - Reinsurance: Quota share 40% across Property; excess layers on GL.
- Year-1 parameters (illustrative):
 - Expected loss: \$9.0M; Expenses: \$1.5M; Risk margin initially set informally at 0% (miss).
 - Premium charged: \$12.0M (priced to market cycle, not to modeled loss cost).
 - Economic capital held: \$8.0M; Risk appetite: "Loss at 99% should be absorbable without parent support."

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Case Study – What Went Wrong



Checklist Item	What Went Wrong	Consequence
Technical premiums cover expected loss & expense	Premiums pegged to market cycles; the technical rate wasn't anchored to modeled loss cost and expenses	Misalignment with actual risk; potential over/underpricing; credibility risk
Appropriate risk margin	Margin implicitly set near 0% to keep premiums "competitive"	No buffer for uncertainty; weak commercial credibility;
Commercially credible	No external comparables; premium-to-surplus ratios not referenced	Arm's-length defensibility undermined (transfer pricing)
Hold adequate capital	Economic capital (REC) at \$8.0M vs tail risk indicating ~\$12.0M	Solvency strain at high percentiles; reinsurance not optimized
Meet regulatory requirements & parent risk appetite	No documented alignment to risk appetite thresholds	Governance gaps; potential regulator scrutiny
Qualify for insurance tax deductibility	Documentation thin; inconsistent with third-party norms	Exposure to tax challenge on deductibility
Risk shifting & distribution	Terms didn't clearly demonstrate risk shifting; distribution minimal	Weak insurance characterization under tax rules
Operate under "commonly accepted notions" of insurance	Contract terms and premium setting lacked market-like rigor	Higher challenge risk from tax authorities

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Diagnostic: Pricing ↔ Tax ↔ Capital (The Loop in Practice)



- Pricing re-run (illustrative):
 - Expected Loss \$9.0M + Expenses \$1.5M + Risk Margin 10–15% → Indicative Premium ~\$10.8–\$11.2M
- Tax/Transfer Pricing:
 - Add market comparables; LOB benchmarks; premium-to-surplus ratios
 - Document third-party–like terms; clarify premium allocation across entities
- Capital:
 - Economic Capital (REC) at target percentile suggests ~\$12.0M pre-optimization
 - Quantify diversification → pathway to lower REC via reinsurance/portfolio mix

Risk Pricing & Capital Modeling

When is Each Required



Discipline	Captive Formation	Annual Renewal	Program Enhancement
Pricing	✓ Needed to populate the business plan & parent ROI	✓ Set next-year premium & limits	✓ Re-price incremental risk
Tax Qualification	✓ To secure premium deductibility before launch	✓ Annual, with a focus to re-test if material changes (new lines, retentions)	✓ Re-test IRS metrics if risk profile shifts
Capital Modeling	✓ Required by most domiciles for licensing & business-plan approval	✓ Update for actual experience, dividend decisions	✓ Re-run model; may trigger capital injection or reinsurance purchase

Risk Pricing & Capital Modeling

Checklist

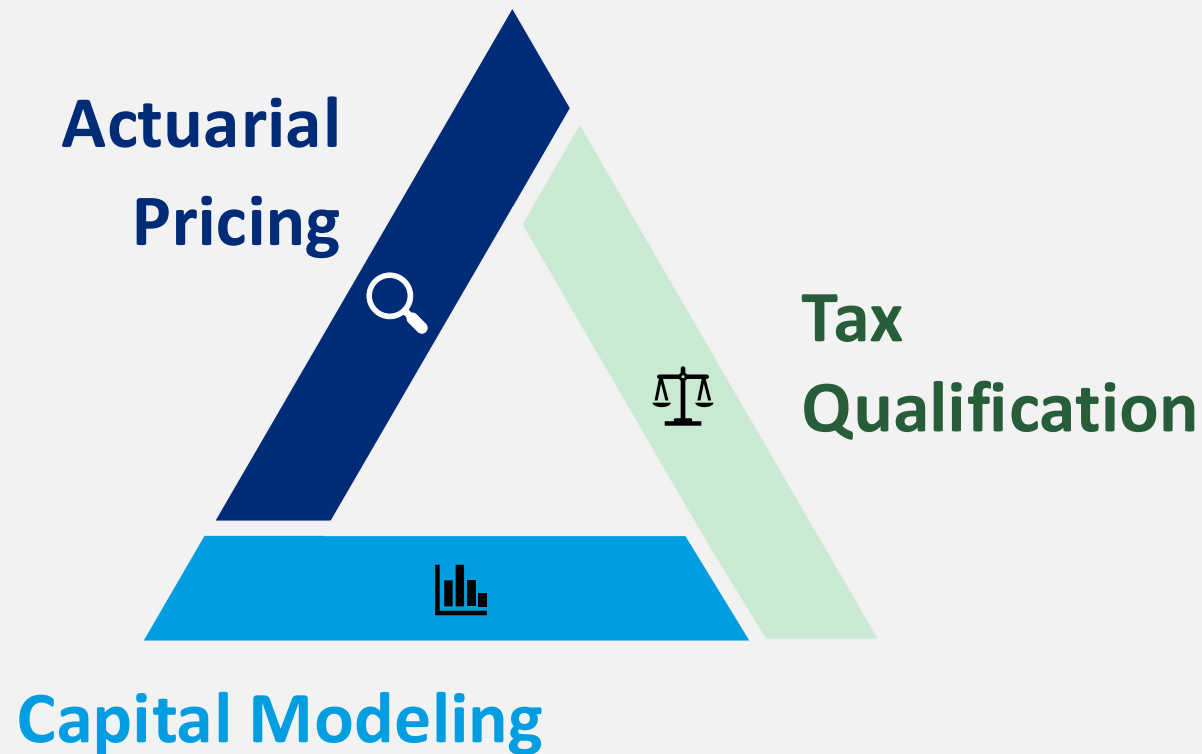


Checklist

- ✓ Technical premiums provided by the actuary
 - ✓ Cover expected loss & expense
 - ✓ Include an appropriate risk margin
 - ✓ Commercially credible
- ✓ Hold adequate capital
 - ✓ Meet or exceed regulatory requirements
 - ✓ Meet parent risk-appetite targets
- ✓ Qualify for insurance tax deductibility
 - ✓ Existence of insurance/insurable risks
 - ✓ Meet risk shifting requirements
 - ✓ Meet risk distribution requirements
 - ✓ Operate under the “commonly accepted notions” of insurance

Risk Pricing & Capital Modeling

Closing Remarks



- Treat the disciplines as **one continuous modelling loop**, not siloed studies
- Use a **single** stochastic engine so numbers reconcile across pricing, tax, and capital
- **Early alignment** with regulators, tax counsel, and actuaries avoids costly re-work late in formation

Questions?



THANK YOU!

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