

45th India Fellowship Seminar

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Granular Reserving and Best Estimate Liability

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Agenda

- Case study overview
- Reserving re-segmentation
- Possible reasons for re-segmentation
- Approach and key challenges in re-segmentation
- Best estimate liability and risk margin overview
- Best estimate liability and risk margin approach for different lines of business
- Communication to the management

Case study overview

Case Study Overview

☐ Company:

- Large multiline general insurer
- Reserves estimated at 28 Line of Business
- Historically aggregated reserving approach

☐ Suggestions by the Regulator:

- Segregate segments within LOB for reserve analysis
- Monitor implied ultimate loss ratios

☐ Management Perspective:

- CFO seeking best estimate IBNR for budgeting
- Requirement to separately identify risk margin

Reserving re-segmentation

Reserving segmentation

- **Reserving segmentation** refers to the practice of splitting an insurer's claims experience into smaller, more homogeneous groups before estimating technical reserves.
- **Typical Segmentation Dimensions**
 - i. Line of Business
 - ii. Claim Characteristics
 - iii. Policy Features
 - iv. Distribution Channel
 - v. Geography

Areas for Further Segmentation

Motor:

- OD vs TP
- Private Car / Commercial / Two-Wheeler
- Perils: Death vs Injury
- Geographical splits (metro, litigation-prone states)
- Distribution channel (Agency, Banca, OEM)

Health:

- Group vs Retail
- Indemnity vs Fixed Benefit
- Cashless vs Reimbursement
- Government Schemes

Property / Fire:

- Large Risk vs SME
- CAT vs Non-CAT
- Engineering / CAR / EAR

Liability:

- Public Liability / WC / Product Liability
- Large vs Attritional Losses

Miscellaneous:

- Marine: Cargo vs Hull
- PA: Individual vs Group

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Possible Reasons for re-segmentation

Reasons for Further Segmentation



- Improve Accuracy: Segmentation reveals true loss patterns hidden by portfolio aggregation.
- Market Concerns: Reserve pressures are emerging, especially in long-tail and volatile segments.
- Enhance Prudence & Diagnostics: Granular analysis highlights reserving gaps and tests premium adequacy.
- Capture Emerging Trends: Supports early identification of inflation, severity, and utilization trends.
- Governance & Transparency: Enhances understanding beyond 28-LoB reporting and improves transparency.



Approach and key challenges in re-segmentation

Approach for New Segmentation



- Based on additional areas identified, propose new segmentation framework, aligned with regulatory expectations and best practices.
- Assess data availability, including need for any data adjustments or benchmark data.
- Reconstruct historical triangles, perform data reconciliations at aggregate level between old and new segmentation.
- Perform reserving at segregated segments, conducting parallel runs, diagnostics and comparisons with previous estimates.
- Analysis of change, and need for any further refinement.
- Governance and documentation.

Key Challenges



- Data quality: missing fields, inconsistent coding, unavailability.
- Sparse triangles after re-segmentation.
- Operational effort: data extraction, system changes, adjustments.
- Training needs for actuarial & finance teams, communication to auditors, change management - securing stakeholder buy-in (likely to involve additional time, effort and cost).
- Governance of updated methodology, assumptions and results at new segmentation and analysing drivers for differences (if any) with previous estimates.
- Tight timelines before next annual valuation cycle as it's already Q2.



Best estimate liability and risk margin overview

Overview of Best Estimate IBNR and Risk Margin

- **Best Estimate (BE) and Risk Margin (RM) could be aligned to global risk-based frameworks.**

$$\text{Total IBNR} = \text{BE IBNR} + \text{RM}$$

- **Best Estimate**
 - A probability-weighted mean of future cash flows.
 - No implicit or explicit prudence margins.
 - Based on unbiased assumptions reflecting current experience and future expectations.
- **Risk Margin** - based on objective and definition, it could mean -
 - Explicit allowance for uncertainty in the BE,
 - Amount for bearing non-hedgeable insurance risk.
- The IBNR should be compared to previous budgeting exercises.

Best Estimate: Framework and approach

- **Select approach:** Leverage existing regulatory reserves, if appropriate as starting point, or develop an independent BE model where required.
 - Adjust regulatory reserves: Remove embedded prudence - implicit or explicit in claims and premium provisions, or
 - Independent BE modelling (if required): Apply multiple methods (CL, BF, ELR, Cape Cod), with adequate allowance for tail development, inflation, large losses, and exposure shifts.

Modelling of claims and premium provisions separately.
- **Bridge to purposes of budgeting :** Adjust for differences from regulatory valuation e.g. discounting, reinsurance bad debts, events not in data, additional expenses, contract boundaries, etc.
- **Comparison and validation:** Perform reasonableness checks against experience, trends, and prior valuations.

Risk Margin: Framework and approach

- Definition, objective and any existing regulatory framework around risk margin.
- Measurement of uncertainty dependent on data availability :
 - Stochastic reserving techniques (e.g. bootstrap) to derive a full distribution of reserve outcomes.
 - Analytical / proxy approaches where data is limited, or industry benchmarks (e.g. CoVs from industry studies).
- Acceptable methodologies to calculate RM:
 - Percentile approach: as the difference between a selected confidence level and the mean of the reserve distribution.
 - Cost of Capital approach: Cost of transferring insurance obligations to a third party; based on future capital required to support non-hedgeable risks, multiplied by a company defined cost of capital (like current 6% under Solvency II).

**Best estimate liability and risk margin approach
for different lines of business**

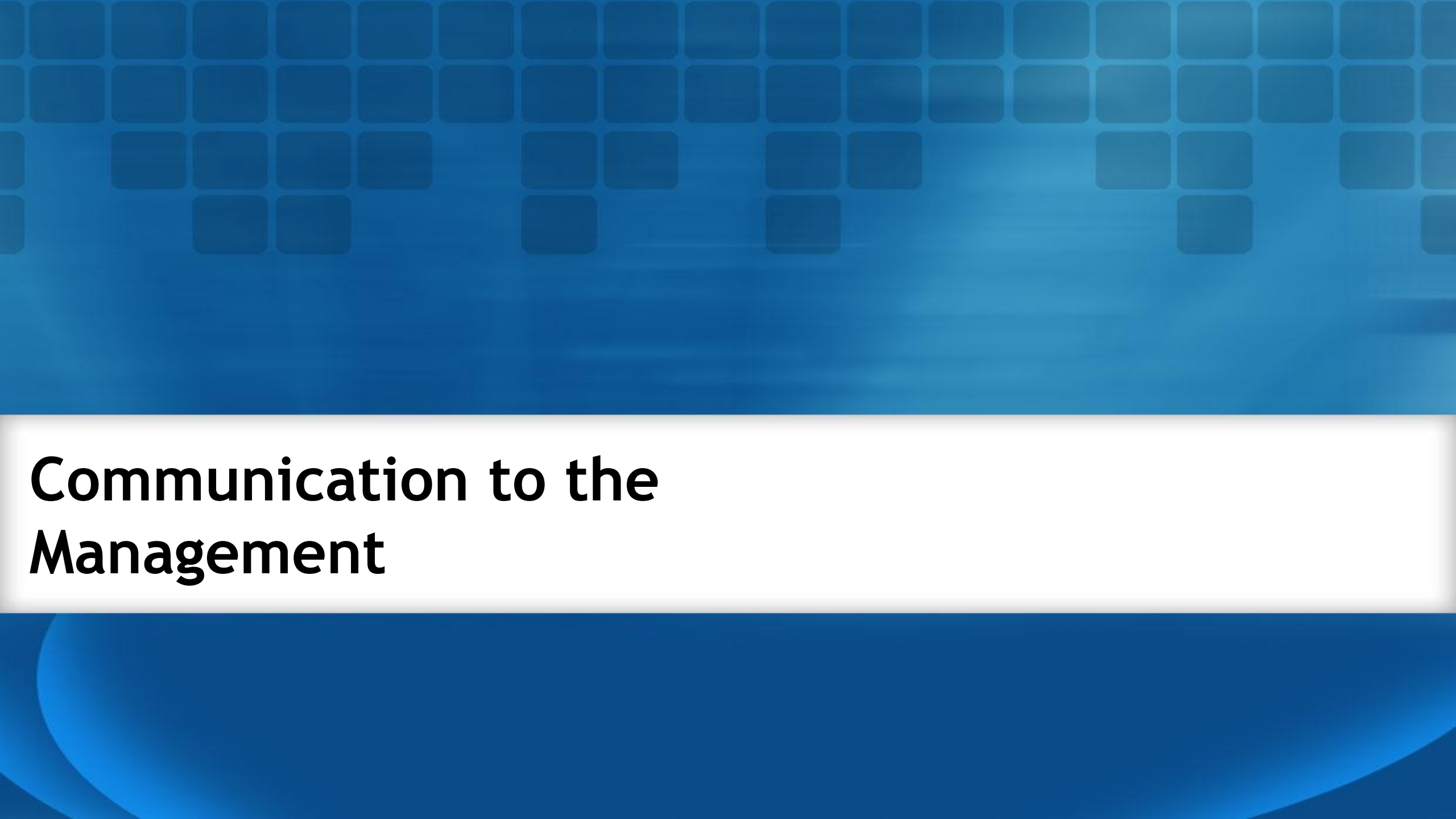
Different Approach for different LOB

Different LoBs Have Different Characteristics

- **Development periods:**
 - Motor TP = long-tail
 - Motor OD = short-tail
- **Claim severity variance**
- **Reporting delays:**
 - Health cashless = fast reporting
 - Health reimbursement = delayed reporting
- **Large-loss volatility:**
 - Fire, Engineering, Marine Hull
- **Catastrophe exposure:**
 - Fire EQ, Crop, STFI-heavy portfolios
- **Legal / court uncertainty:**
- **Liability, Motor TP**

Implications for Reserving Approaches

- **Motor TP:**
 - BF methods preferred
 - Tail modelling essential
 - Bootstrap for RM
- **Health:**
 - Faster development
 - Incurred Chain Ladder more stable
 - Seasonality adjustments needed
- **Property:**
 - Treat large losses separately
 - Attritional vs per-risk segmentation
- **Liability:**
 - Sparse data → IELR/BF more reliable
- **Crop:**
 - ELR or exposure-based approaches dominate



Communication to the Management

Result communication

1. Executive Summary

- High-level Best Estimate (BE) and Risk Margin (RM) by major LoBs
- Movements vs prior valuation
- Key drivers. Eg- Portfolio mix changes, Large losses, Inflation trends etc.

2. Clear Distinction Between BE and RM

- Best Estimate: Unbiased central estimate
- Risk Margin: Allowance for uncertainty
- Clarify regulatory expectations and role of prudence

3. Visuals & Dashboards to Aid Understanding

- Triangle diagnostics: heat maps, LDF trends
- Ultimate Loss Ratio trend
- Waterfall chart: Prior IBNR → Method changes → Experience → Final BE → RM
- Monitoring of experience - Actual vs expected or run-off analysis
- Comparison of old vs new - explaining differences as necessary
- Consistency of estimates going forward - does it lead to better presentation and disclosure of results - does it support true and fair valuation in balance sheet

4. Scenario & Sensitivity Analysis

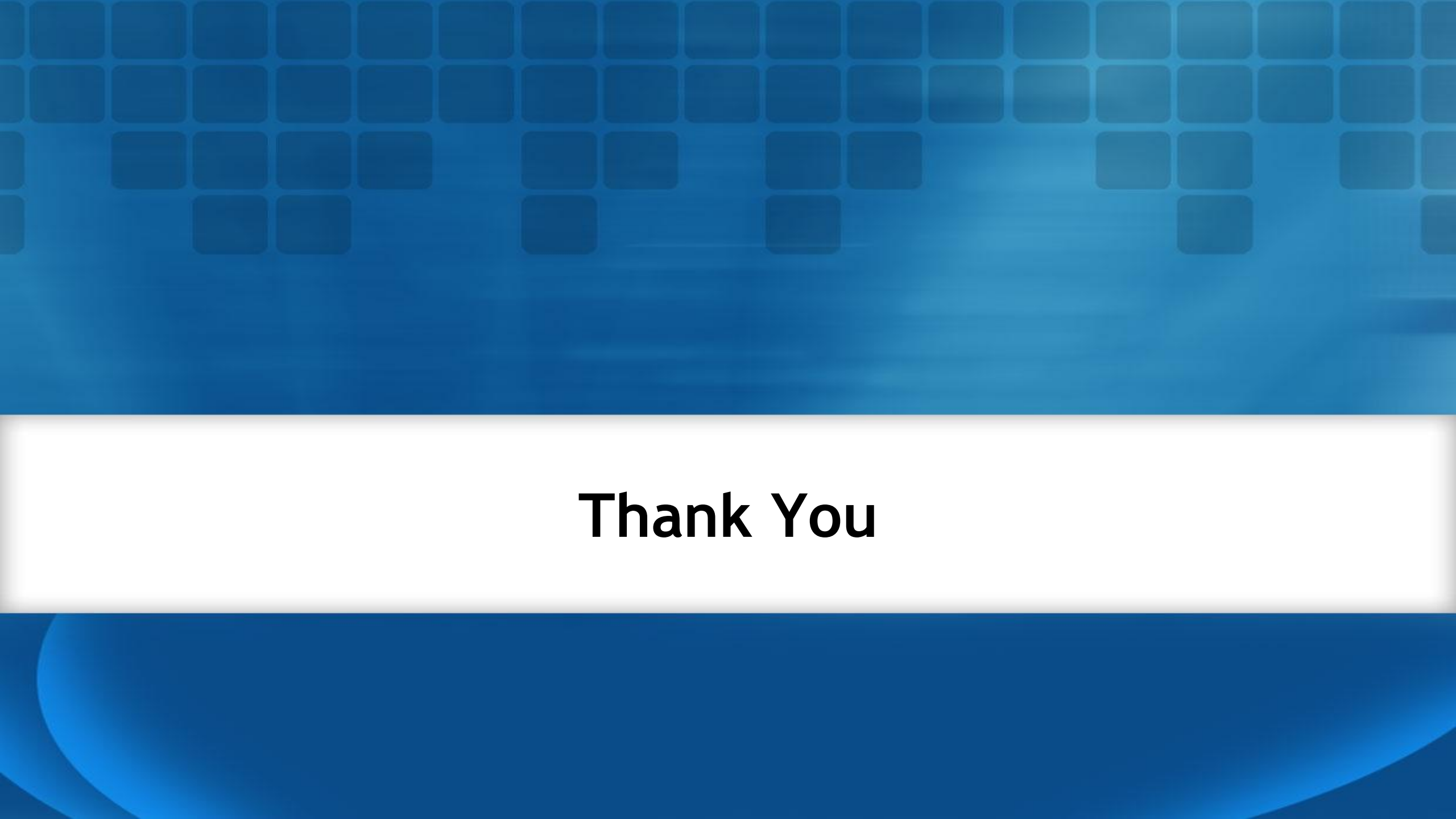
- Tail factor sensitivity ($\pm X\%$)
- Impact of large-loss assumptions
- Range of reasonable actuarial estimates

5. Recommendations

- Areas needing better data capture
- Segments showing emerging deterioration
- Pricing and budgeting implications

6. Managing CFO Expectations

- Best Estimate (BE) reserves should not be influenced by profit or budget targets.
- Actuarial judgement must remain independent for regulatory reserving.
- Clarify use of loss ratios for budgeting vs regulatory reporting.
- Separate BE liabilities from prudential reserves where regulations require conservatism.
- Highlight solvency and policyholder protection implications.
- Clearly communicate different bases across management, financial, and regulatory reporting

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Thank You