Value Added Reserving

A presentation to Singapore Actuarial Society
by Jim Qin

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TOWERS WATSON

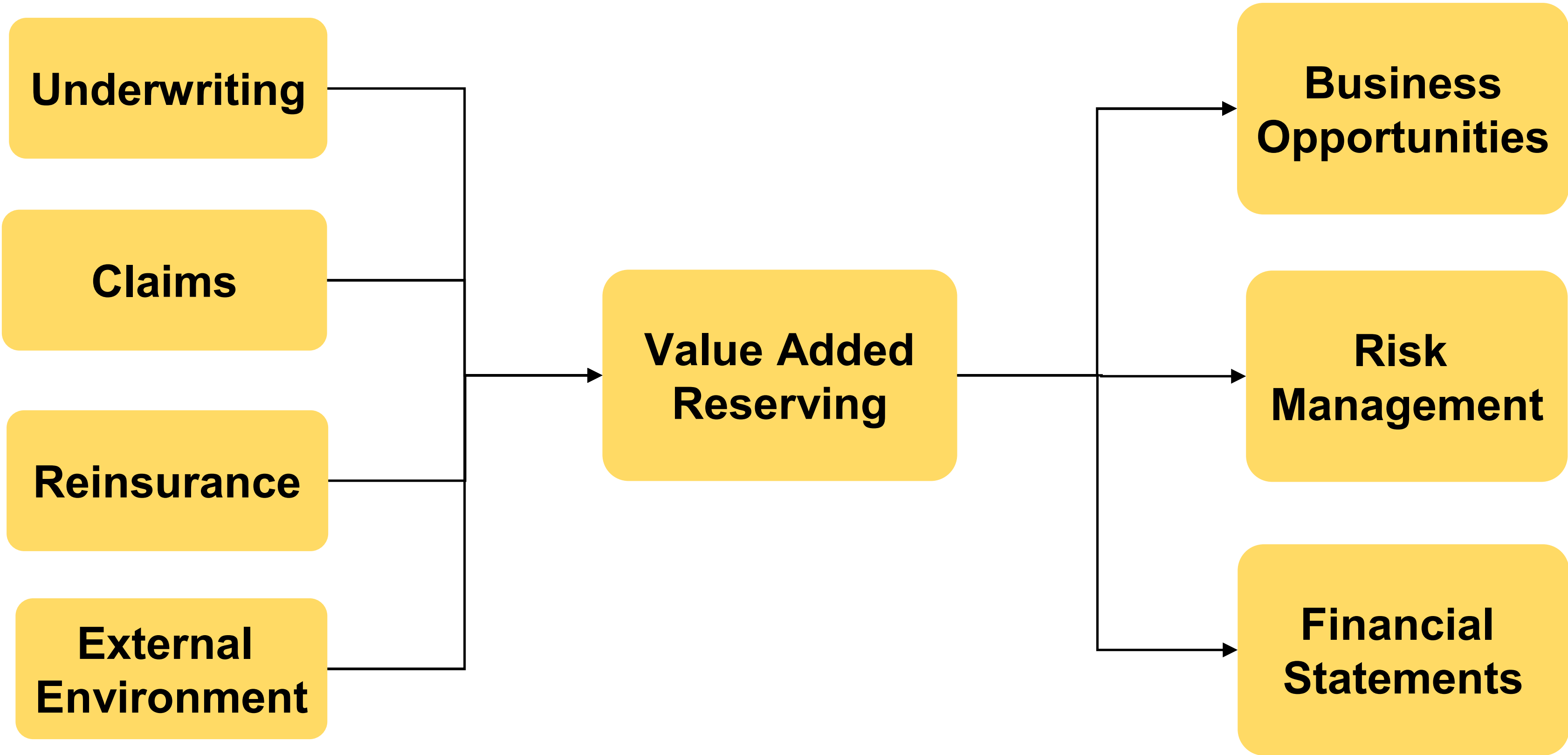
Agenda

- Traditional vs Value Added Reserving
- The three tiers of reserving
  - Meeting requirements
  - Better reserve estimates
  - Identify business opportunities

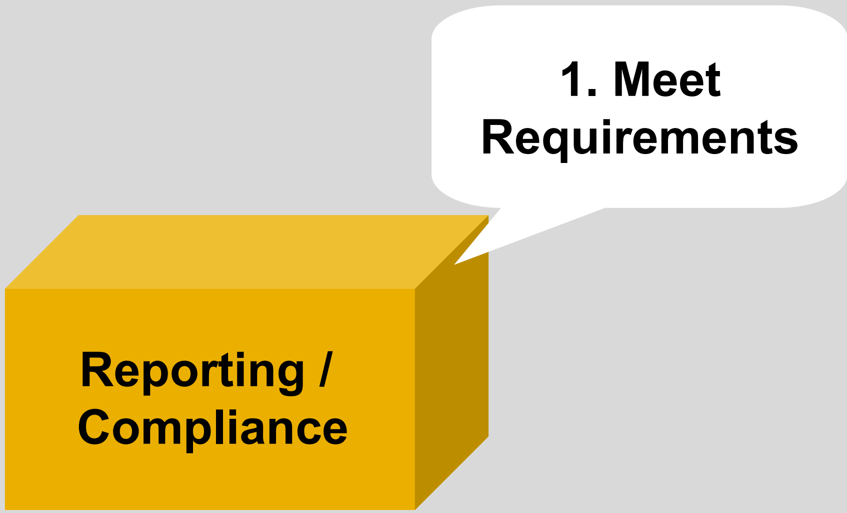
Traditional vs Value Added Reserving

Traditional Information Flow

New Information Flow



The Three Tiers of Reserving



1. Reporting and Compliance

- Regulatory Requirements
  - Risk Based Capital Framework
  - Reserving requires actuarial Sign-off
  - Used to assess an insurer's capital requirement / capital position
- Accounting Standards
  - A set of "clean" financial statements
    - Stakeholders include Finance (internal) and external auditors
  - Transparency in financial performance and financial position
    - FRS disclosures for shareholders and stock analysts
- Actuarial Professional Standards / Guidance
  - Ensure consistency in valuations
  - Protects the profession

The Three Tiers of Reserving

2. Better Reserve Estimates

Reserving is just fortune telling, actual experience will always be different.

Reserving is compliance. Why spend so much time?

No need for accurate reserves: it only impacts the timing of profitability

2.1 Business Planning

- Why do we need better reserve estimates?
- Because reserving provides the latest information on market conditions and claim trends.
  - Reported loss ratios may not the best indicator for future pricing decisions
- Reserve information are often inputs to the financial plan. It may influence business decisions such as:
  - Which lines of business to growth
  - The level of pricing change required to meet profitability targets
  - Future cash flow – asset liquidity
- Because over (under) reserving leads to over pessimistic (optimistic) view of future business environment (financial planning)
- How do we improve reserve estimates?
  - Responsiveness to environmental changes
  - Qualitative inputs from other business operations
  - Hindsight testing / Ongoing monitoring

2.2 Capital Management

- Reserving is not just about a single point estimate, it can provide distribution of outcomes.
  - What is the confidence interval?
  - What is the mean, medium, skewness and kurtosis of the distribution?
- Capital management
  - Quantified uncertainties provides management a tool to measure risk
  - Different levels of uncertainties between products require different levels of capital support, and different profit margins.
  - Allocating capital based on risk measures can optimise an insurer's ROE
- How:
  - Identify risk components
  - Scenario testing
  - Stochastic reserving

The Three Tiers of Reserving

3.1 Underwriting Analysis

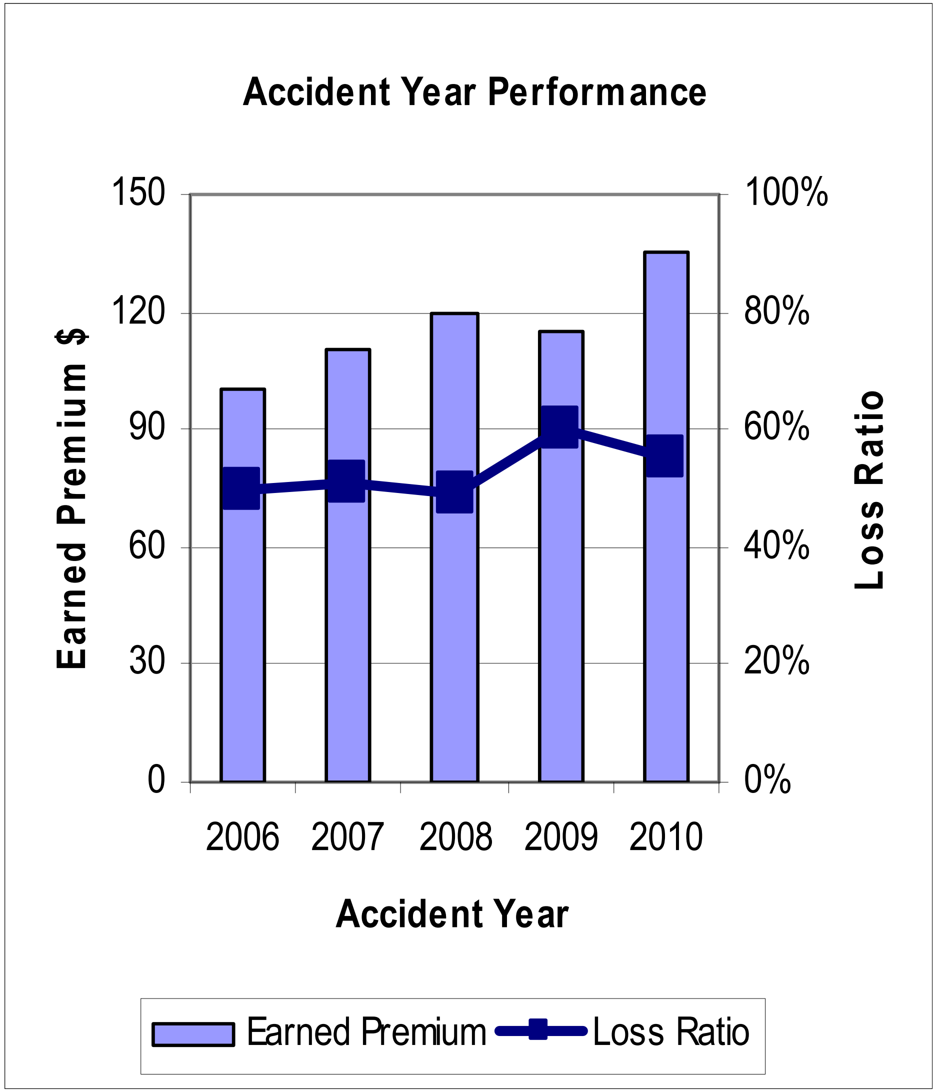
- From Underwriting to Reserving
  - Analysis of historical claims experience
  - Changes in mix of business
  - Changes in product coverage
  - Changes in underwriting guidelines
- From Reserving to Underwriting – Identify business opportunities
  - Underwriting cycle – overall pricing strategy
  - Target profitable segments
  - Estimate impact of external factors
  - Identify additional rating variables

3.1 Underwriting Analysis

- Analysis of frequency and severity trend:
  - By underwriting segment (e.g. geography, distribution)
  - By type of claim (e.g. theft, windscreen)
  - By payment type (e.g. legal, labour, parts)
- Estimate the impact of internal changes – take corrective actions
  - Rate changes: did it achieve the expected impact on loss ratios?
  - Distribution strategies: what is the performance of new distribution channels?
  - Underwriting: what is the impact of additional product benefits or changing deductibles?
- Estimate the impact of external changes – future pricing consideration
  - Seasonality: is the claims experience worse in holiday season?
  - Climate changes: is the improving loss ratio due to dryer weather?
  - Impact of claimant behaviour – is rate change required?
  - Inflation – cost inflation or simply changes in mix of claims (i.e. small claims disappearing)
- Techniques
  - Standard triangle techniques but at a more granular level
  - Analysis of trend instead of using weighted averages
  - Discuss with underwriters
  - Benchmark against industry

3.1 Underwriting Analysis

- Change in Earned Premium
  - Premium rate
  - Business volume (no. of policies)
  - Risk exposure (e.g. sum insured)
- Change in Claims Cost
  - Claim frequency
  - Claim severity
  - Business mix?
  - Unknown component



The Three Tiers of Reserving

3.2. Claims Management / Operation

- Analysis of Claims and Expenses
  - Reporting delay
  - Finalisation / re-activation rate
  - Average cost per claim settled or per active claim
  - Average case outstanding and payout ratios
  - Expense allocation
- Identify cost saving measures:
  - Did quicker finalisation rate reduce or increase average claims cost?
  - Impact of using own (or third party) repairers / suppliers / legal services
- Identify best practice claims management process
  - Identify resource (case managers) needs based on case loads
  - Effective data management / information system
- Techniques
  - Triangles but focusing on claims management process
  - E.g. PCE / PPCF / PPCI / PPAC / PPCFOP…….
  - Model claim transitions. e.g. from notification to claim, from active weekly payment to settlement
  - Discuss with claims managers and benchmark against industry
  - Regression

3.2. GLM Techniques

- Generalised Linear Modelling
  - Predict claims outcome by modelling internal and external drivers
  - Suitable for long tail products
- Identify drivers of superimposed inflation
- Statistical Case Estimates
  - Claims benchmark
  - Identify claims leakage / fraud
- Transition Probability Matrix
  - Focus on different stages of claims handling
- Predictive modelling - Claim Management KPI
  - Establish best practice

E.g. Total Claim Inflation = 7%

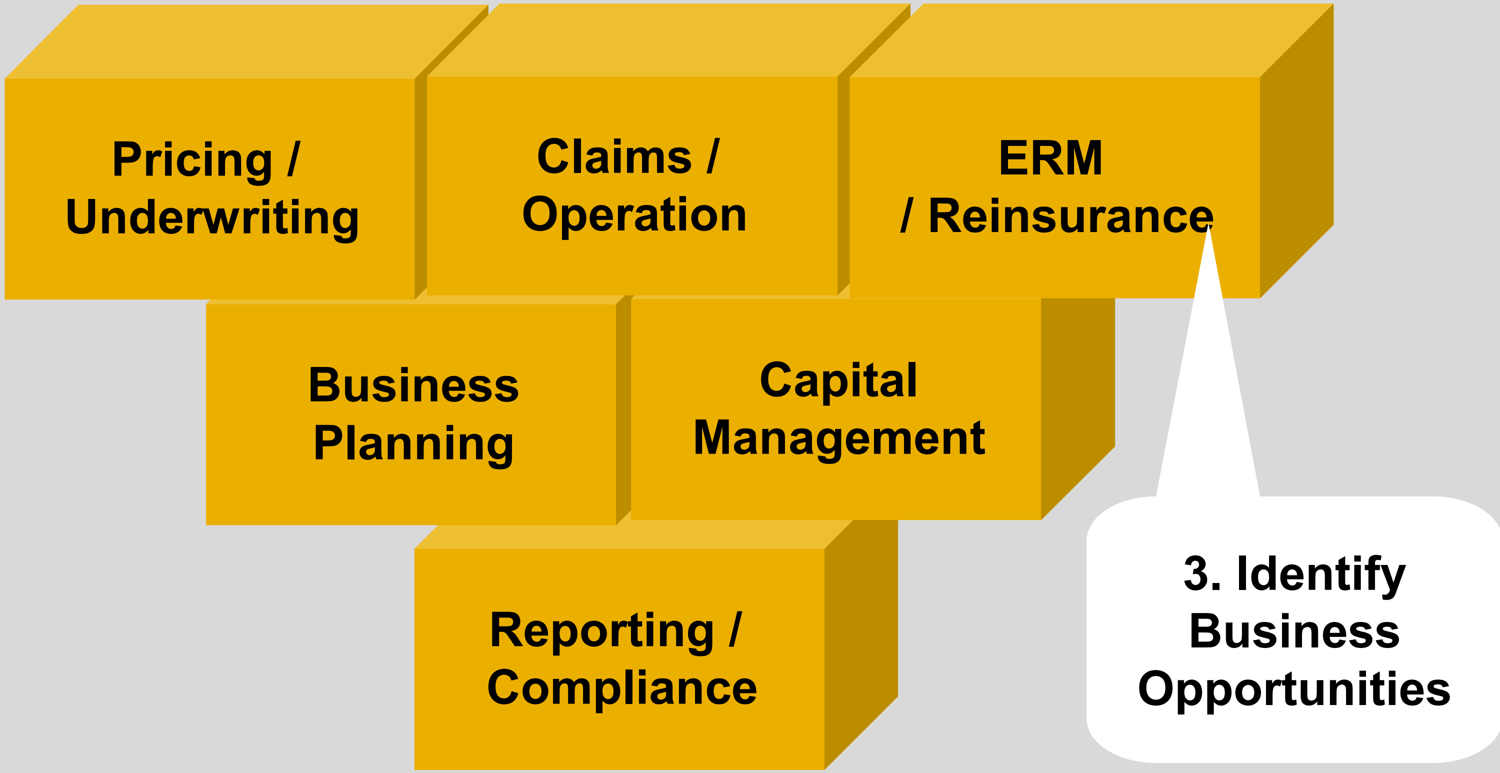
Model 1: change in claim mix (+2%)
e.g. type of damages / injuries

Model 2: change in claims process (-3%)
e.g. settlement rate

Model 3: Adjust for CPI (+3%)
e.g. Medical inflation / Labour cost
Car parts / Exchange rate

Model 4: Other external factors (+5%)
e.g. GDP / Unemployment
/ legislative changes

The Three Tiers of Reserving



3.3 Reinsurance

- Reinsurance
  - Reinsurance program is a key component of net reserve analysis
  - Analysis of historical gross and net experience provides indication of sub-optimal reinsurance program
  - Analysis of uncertainties provides insights to reinsurance pricing
- Stochastic reserving
  - Transparency in reserve adequacy: What is the probability of adequacy of the reserves held (including extra margins)?
  - Risk assessment is key input to Enterprise Risk Management
  - Test different reinsurance programs / retention of risk
- Advantages
  - Quantifying the probability distribution of outcome
  - A single method to determine both central estimate and PAD
- Shortcomings
  - Usually automated and difficult to allow judgement
  - Requires significant amount of data which is often not available

Summary

- As actuaries, if we believe reserving is simply compliance driven and take a minimalist approach, then we are destroying the value of our profession.
- Value Added Reserving is about working closely with the rest of the insurance operations.
- Let us take the actuarial profession to the next level!

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Thank You

- Questions?