Crop Insurance - Reserving

8th Capacity Building Seminar in General Insurance

By

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What do we plan to discuss today?

Nature of Crop Insurance | Business Acquisition

Government Involvement

- Political support for marketing
- Subsidy makes it affordable
- ⇨Claims delay sometimes caused by subsidy
- Political influence in claims

Banking network

- ⇨Compulsory for loanee farmer → lower anti-selection
- ⇨Reliance for data accuracy and u/w
- ⇨Lower expenses

Nature of Crop Insurance | Risk Exposure

Correlated Risk

- High Volatility in claims experience
- Catastrophic nature
- ⇨Climate change – impact unknown

Yield Risk / Weather Risk

- ⇨Exposure throughout sowing, standing & harvest
- ⇨Heavy reliance on Monsoon during Kharif
- ⇨No “claim occurrence” date

Nature of Crop Insurance | Claim settlement

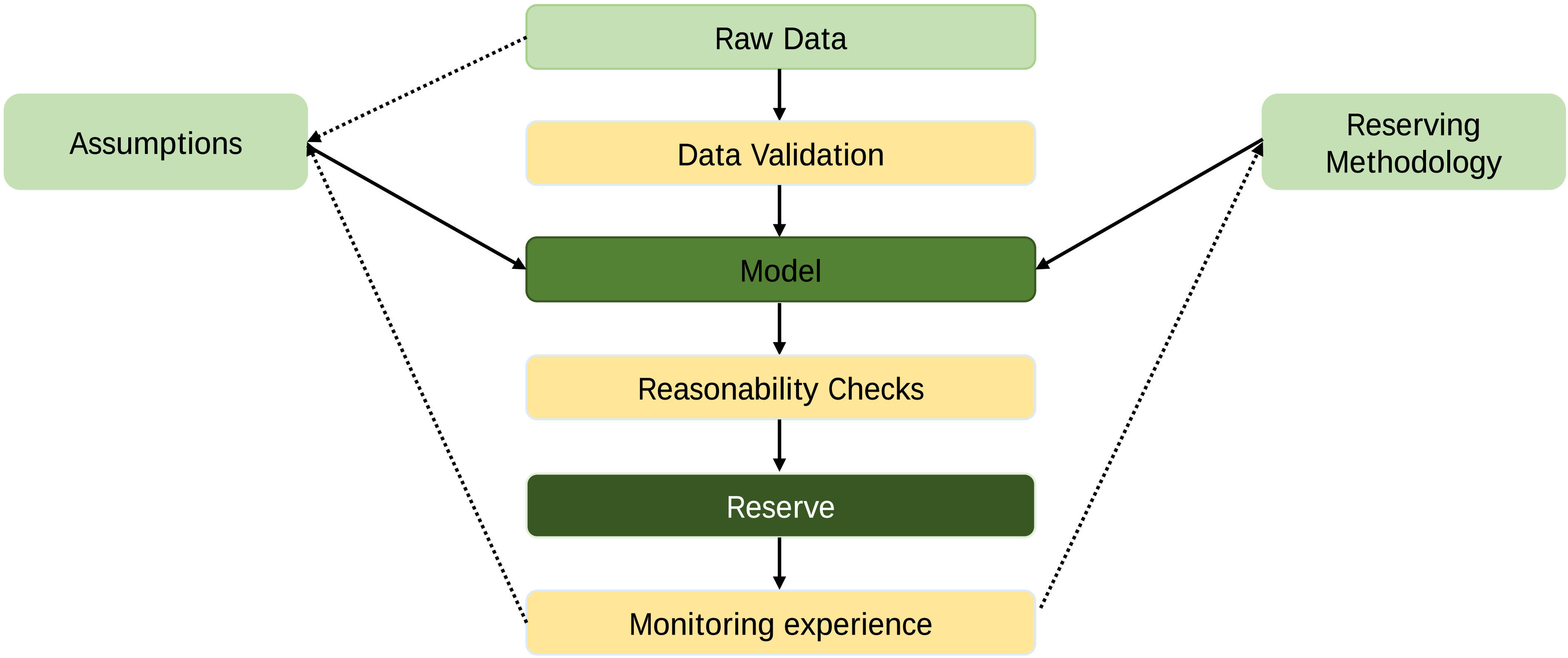
Not initiated by policyholder

- Claim reporting delay not relevant
- At times politically influenced
- ⇨Potential for organised fraud

Area Approach

- ⇨Claim “numbers” not relevant
- ⇨Data at policyholder level not required for actuarial analysis
- ⇨Stray claims delayed due to error in declarations

Reserving Flowchart



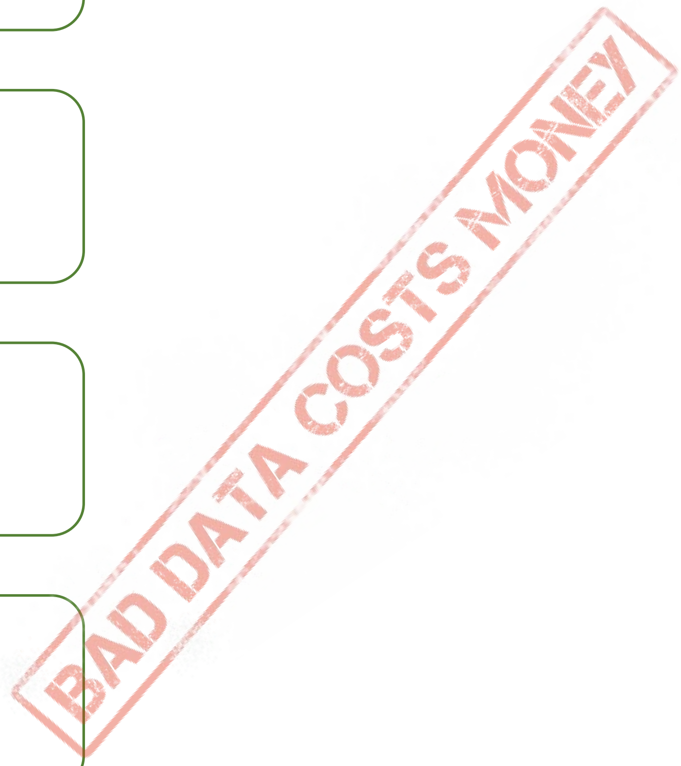
Data

Errors in Declaration
- Crop sown / area sown may differ
- Delays in premium recognition

Large Volume & not automated
- Human Errors
- Time & resource extensive

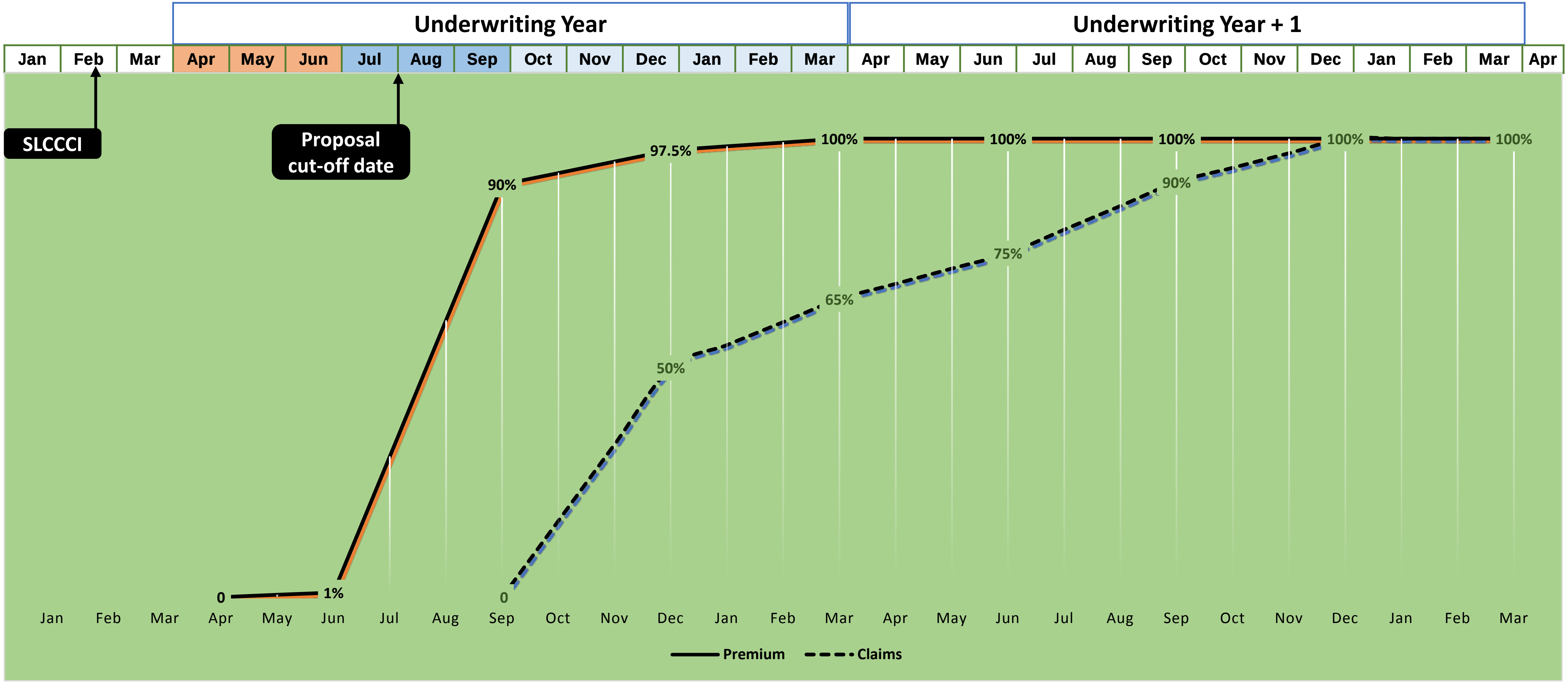
Claims Data
- Requisite number of CCEs may not happen
- Unreliability in CCEs sometimes
- CCEs delayed

Data Validation
- Against past
- Against data source for other purposes
- Against expectation from pricing
- Reasonableness



Cashflow Timing | Kharif example

Kharif Season – example of claims reporting pattern



Cashflow Timing | Impact on reserves

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Kharif Season – example of claims reporting pattern

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Premium	<1%	90%	7.5%	2.5%					
UPR & PDR	?	?	High	Med					
Claims Reported		V. Low	50%	15%	5%	20%	10%	V. low	
Case Reserves			High	High	High	Med	Med	Low	
IBNR		Low	High	High	Med	Med	Low	V. low	

Rabi Season – example of claims reporting pattern

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Premium			10%	85%	5%				
UPR & PDR			?	?	Med				
Claims Reported				V. Low	50%	25%	15%	7.5%	
Case Reserves					High	High	Med	Med	
IBNR				Low	High	High	Med	Med	

Reserving Methodology

Choose appropriate method based on	• Nature of business • Guidance from Regulator • Data availability • Consistency in results
Case Reserves	• Based on claim calculation using CCE data / weather data
UPR	• 50% of annual premium to be conservative, OR • 0% of premium due to delay in premiums
PDR	• Evaluation of premium against expected claims + expenses

Reserving Methodology | IBNR

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Ultimate Loss Ratio (ULR)	• Currently used by most insurers in the industry • Also used globally, for e.g. US market • Ultimate losses expected less claims reported so far
Other possibilities	• Bornhuetter-Fergerson method • Chain Ladder method
Unsuitable because	• Claims settlement pattern not reliable • Link ratios initially can be volatile • Ignore the latest weather information available in market

Assumptions

Loss Ratio – major assumption

Estimate before harvest based on

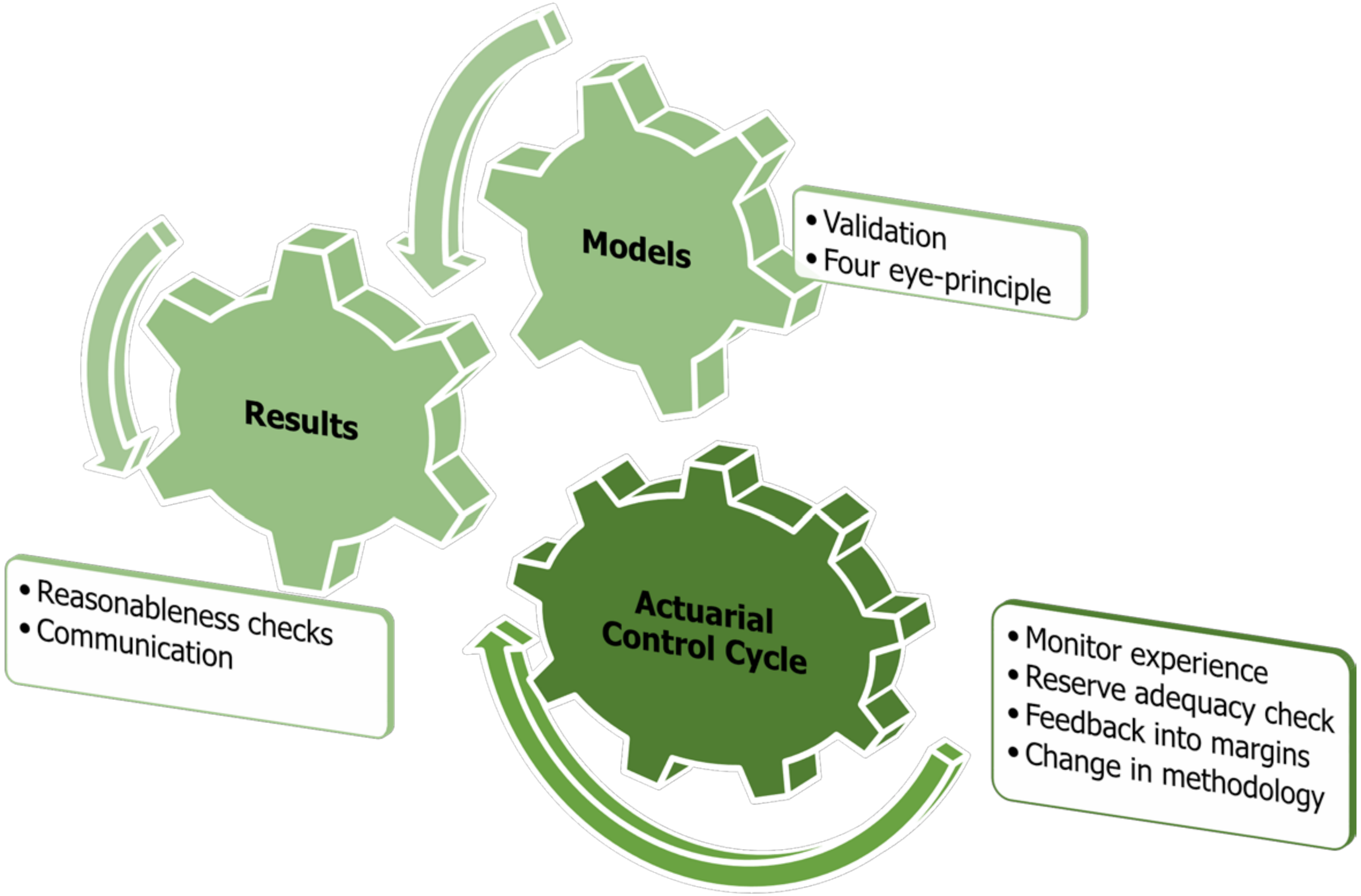
- Priced loss ratio
- Past loss ratios
- ⇨Weather forecasts

Estimate during & after harvest

- ⇨Feedback from observed CCEs
- ⇨News reports, weather data
- ⇨Ratio of reported claims

Expenses – past experience / estimated based on salary costs

Models & Results



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Summary

- Nature of Crop Insurance makes it unique
- Market is still in nascent stages – patterns may yet emerge
- Political influence in claims – beneficial as well as a challenge
- High level of judgement required in reserving

Conclusion | Way Forward

- Reserving beyond just for the season to tackle climatic volatility
- Use of formulae for calculating projected loss ratios? Hybrid methodologies possible?
- Impact of digital advancement
- Loss ratios more granular levels?
- What should “claims occurrence” date be? Is it even relevant?
- Premium delay -> should additional reserves be held?
- Time for guidelines from the Institute?
- Impact of increased actuarial involvement in pricing

The Possibilities

Thank You