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ACTUARIAL CONSULTING

ACTUARIAL RESERVING INTERFACE

Insurance Conference | Lusaka Zambia

16th November 2023

Definition of Reserving and Background

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What is Reserving?

- Reserving is the estimation of funds required to pay off **future claims arising from existing insurance policies**.

- Every insurer is obligated to pay the policyholder or an injured party on behalf of the policyholder in the **event of an occurrence covered by the insurance policy**.
- There are certain events where the exact costs of the settlement are easily quantified and there are others where the **ultimate cost is not known**.
- Claim reserves represent the insurer's estimate of its current liabilities for claims that **occurred on or prior to the financial statement reporting** date but that have not yet been paid.
- The Capital adequacy and Solvency regulations which stem from the Insurance Act, No. 38 of 2021 stipulates that a "licensed insurer shall, for the purposes of Section 62 of the Act, make provisions for **claims not reported using the chain ladder method**".

Chain Ladder and Other Reserving Methods

Insight into Claims Triangles

- Claims triangles are used to project the **historic claims** in order to determine the **future ultimate loss position**.
- One axis of the run-off triangles matrix (vertical one) denotes accident year, and the other axis (horizontal one) denotes development period.
- Accident year specifies in which year the **“accident” / claim event** occurred.
- Development period specifies after how many years after the start of the accident year that the claim is reported or settled.

Cumulative Paid Claims

	Development Years							
	0	1	2	3	4	5	6	7
2015	-	192.00	176.00	203.00	219.00	231.00	238.00	245.00
2016	100.00	120.00	135.00	145.00	145.00	145.00	145.00	
2017	200.00	225.00	242.00	261.00	277.00	277.00		
2018	300.00	379.00	411.00	411.00	411.00			
2020	5,300.00	6,200.00	6,881.00					
2021	6,000.00	7,049.00						
2022	7,200.00							

Accident Year

Development Year

Claims Cohort

Example of Age-to-age factors

Cumulative Paid Claims

	Development Years							
	0	1	2	3	4	5	6	7
2015	-	192.00	176.00	203.00	219.00	231.00	238.00	245.00
2016	100.00	120.00	135.00	145.00	145.00	145.00	145.00	
2017	200.00	225.00	242.00	261.00	277.00	277.00		
2018	300.00	379.00	411.00	411.00	411.00			
2019	4,500.00	5,100.00	5,330.00	5,590.00				
2020	5,300.00	6,200.00	6,881.00					
2021	6,000.00	7,049.00						
2022	7,200.00							

Age to age factors

	Development Years						
	0:01	1:02	2:03	3:04	4:05	5:06	6:07
2015		0.92	1.15	1.08	1.05	1.03	1.03
2016	1.20	1.13	1.07	1.00	1.00	1.00	
2017	1.13	1.08	1.08	1.06	1.00	-	
2018	1.26	1.08	1.00	1.00	-		
2019	1.13	1.05	1.05	-			
2020	1.17	1.11	-				
2021	1.17	-					
2022	-						

Development Factors - Incurred Claims								
All Year - Simple average	1.17	1.08	1.04	1.03	1.00	1.00	1.00	1.00
All Year - Volume Weighted	1.16	1.08	1.05	1.02	1.00	1.00	1.00	1.00
Manual Selection (Expert Judgement)	1.156	1.081	1.051	1.000	1.000	1.000	1.000	1.000
Selected LDF	1.156	1.081	1.051	1.000	1.000	1.000	1.000	1.000
Cumulative LDF	1.313	1.135	1.051	1.000	1.000	1.000	1.000	1.000
Percentage Developed	76%	88%	95%	100%	100%	100%	100%	100%

Actuarial Reserving Methods

1. **Chain Ladder Method**

- For this method historic data is used to predict the future, assuming that the past is a good indication of the future.
- It is based on the use of development factors which are eventually used to project the reported claims to an ultimate loss position.
- Development factors describe how the claims develop over time towards their ultimate claim position.

2. **Expected Loss Ratio (ELR) Method**

- Can be used as an alternative to chain ladder for years at very early stages of development.
- Under this method the ultimate claims are calculated by multiplying the expected ultimate premium by the ELR.

3. **Bornhuetter-Ferguson (BF) Method**

- The BF method is essentially the weighted average of the chain ladder and ELR methods.
- Combines elements relating to past (incurred or paid experience) and future exposure.

Importance of development factors

Definition of development factors

- Development Factors are ratios used by actuaries to adjust initial reserve estimates for insurance claims, reflecting the evolution of claim payments over time.

Importance of development factors

- Reflecting Claim Development Over Time: Development factors account for the evolution of insurance claims over time.

- Adjusting Initial Reserve Estimates: Development factors are used to adjust these initial reserve estimates to reflect the actual progression of claims.

- Reinsurance Arrangements: more reliably, which, in turn, assists in determining appropriate reinsurance arrangements and premiums.

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