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DEFERRED BENEFIT RESERVE

1st Capacity Building Seminar in Health Insurance
3rd Sep. 2012, Mumbai

- Vishwanath Mahendra

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AGENDA

1.   What are the Deferred Benefits in Health Insurance

2.   Need for Deferred Benefit Reserve

3.   Broad Framework

4.   Approach to Deferred Benefit Reserve

5.   Assumptions & Data Requirements

6.   Worked out example

7.   Challenges

8.   Conclusion

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DEFERRED BENEFITS

Deferred benefits are those benefits for which policyholder becomes eligible if he continues policy for a specific number of years. Following are the examples of some of the Deferred Benefits:

➢ Pre-existing conditions covered after certain years

➢ Specific illness/ procedures covered after certain years, e. g., two years exclusion

➢ Maternity covered after 'X' no. of years

➢ Others: There can be other benefits with waiting periods like, Health Check-up, Dental Cover, Outpatient Treatment, etc.

Deferred Benefits are not standard and vary by products. But these are increasingly becoming popular as a result of product innovation.
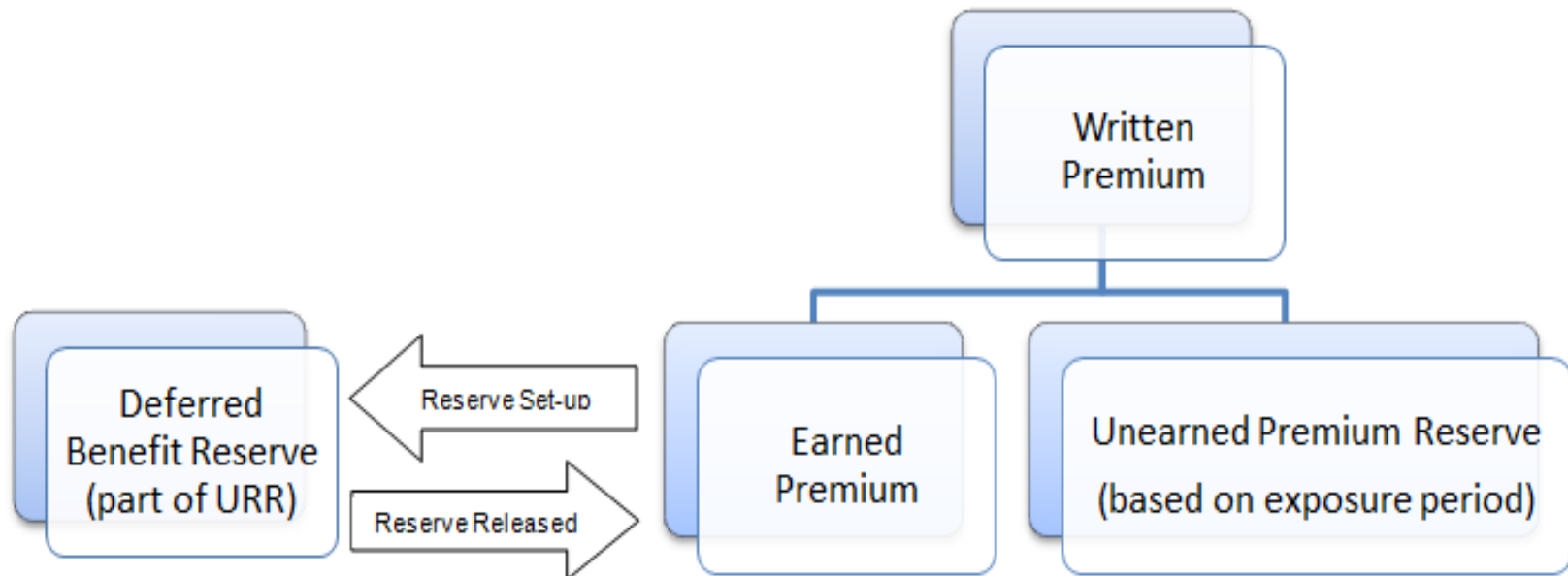
NEED FOR DEFERRED BENEFIT RESERVE

The purpose of waiting period is to control anti-selection and keep premium low. Since, premium is received and earned through out (even when policyholder is not eligible for benefit) there is a need to keep reserve for such benefits.

Following are the points that show need for such reserve:

➢ To smoothen the portfolio performance over the years

➢ It is as per Matching Principle

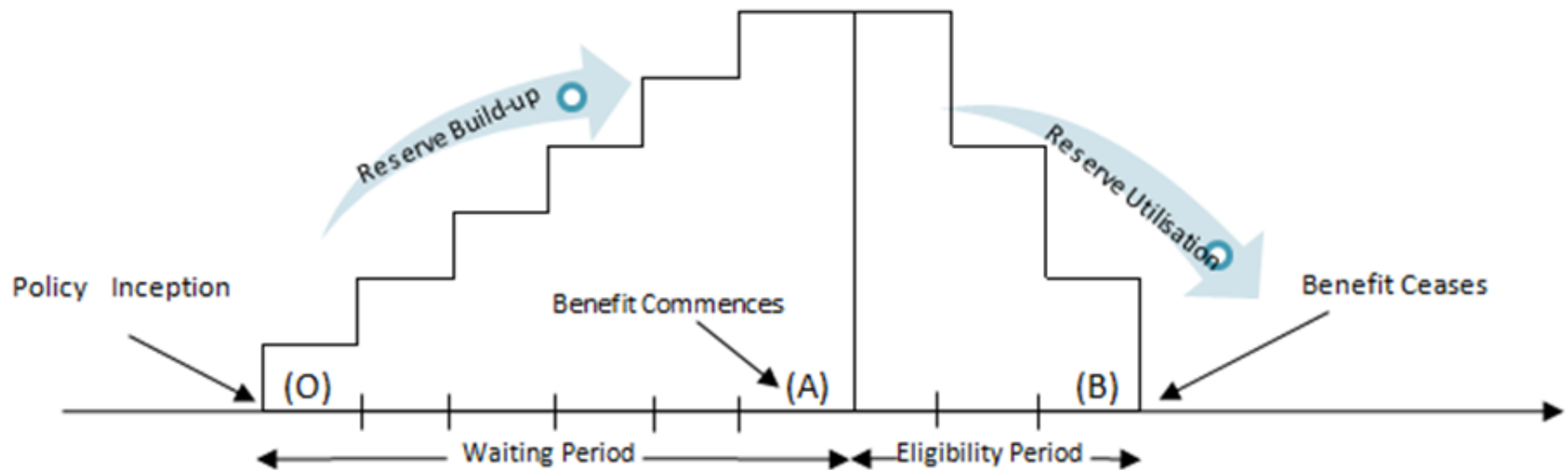➢ This may bring some pricing discipline

➢ To show true solvency position

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BROAD FRAMEWORK

Deferred Benefit Reserve can be part of overall premium reserve.

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                                          ┌──────────────┐
                                          │   Written    │
                                          │   Premium    │
                                          └──────┬───────┘
                                   ┌─────────────┴─────────────┐
┌──────────────┐                ┌──────────────┐        ┌──────────────────────────┐
│   Deferred   │◄── Reserve Set-up  │   Earned     │        │ Unearned Premium Reserve │
│Benefit Reserve│                │   Premium    │        │                          │
│ (part of URR)│── Reserve Released ►                │        │ (based on exposure period)│
└──────────────┘                └──────────────┘        └──────────────────────────┘
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In the above structure the Unexpired Risk Reserve can consist of Unearned Premium Reserve, Deferred Benefit Reserve and Premium Deficiency Reserve (if any).

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BROAD FRAMEWORK

Following diagram depicts the process of reserving for deferred benefit during life time of a policy with waiting period.

Reserve needs to be built up during the waiting period (from time 'O' to 'A') and utilized over the eligibility period (from time 'A' to 'B').

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APPROACH TO DEFERRED BENEFIT RESERVE

Ideally the approach for computation of Deferred Benefit Reserve will be similar to that followed in life insurance. It can be determined retrospectively or prospectively:

Reserve at time t=AV of all inflows till time 't'-AV of all outflows at time 't'

OR

Reserve at time t=NPV at time 't' of all future outflows-NPV at time 't' of all future inflows

AV = Accumulated Value

NPV = Net Present Value

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APPROACH TO DEFERRED BENEFIT RESERVE

However, there are some additional points that need to be considered:

- Generally risk premium for such benefit may not be available separately

- Incidence and average claim size needs to be estimated separately for such benefits

- There can be trends in both frequency and severity and these may vary for each year

- Lapse rate is higher initially and varies by age and time since inception of policy

- Eligibility period may not be clear cut and may need to be estimated for certain benefits

- We may like to provide for some expenses, e. g., claims settlement cost

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ASSUMPTIONS FOR DEFERRED BENEFIT RESERVE

Following are some of the parameters that need to be estimated for computation of Deferred Benefit Reserve:

- Incidence Rate of benefit under consideration

- Average Claim Size of said benefit

- Any trend in incidence rate or average claim size applicable to such benefit

- Renewal rate by each policy year

- Rate of investment yield

These assumptions are dynamic and need to be monitored and revised regularly.

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SOURCES OF DATA

Pricing Assumptions: There must be some set of assumptions made to price such benefits and that should be the primary source of data for such benefits. For example, incidence rate and severity for benefit like health check up or maternity.

Claims Analysis: Company must be classifying claims for diagnosis and procedure by some way. This could be the basis of estimating benefits, like, 2 years exclusion.

Rejected Claims Analysis: There should be a dataset in place of rejected claims due to PED exclusion, that could be a starting point for tagging pre-existing conditions.

Others: For other assumptions like renewal rate, annual inflation etc. similar products can be analysed. Group health portfolio can also be used after suitable adjustment for benefits, like, maternity, health checkup, outpatient, etc.

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WORKED OUT EXAMPLE (ONLY FOR ILLUSTRATION PURPOSE)

Let's take an example to calculate Reserve for Maternity claims with the following details:

- Waiting Period: 4 Years

- Eligibility Period: 6 Years

- Annual incidence rate is 5% going up by 1% (of original rate) annually.

- Average Claim size in last year is Rs. 22,500/-

- Annual inflation is 8% on claim amount.

- Policies are written and claims are paid through out the year.

- Annual Investment Yield is 5%.

- Renewal rate is 65% going up by 10% in the first year and 5% annually thereafter till it reaches 95%

- There is a sublimit of Rs. 50,000/- for maternity

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Computation of Deferred Benefit Reserve (only for illustration purpose)

Time (t)	Renewal	Policies	Severity Trend	Incidence	Claim Size	Cost of Benefit	Level Risk Premium	Period	Inflow	NPV (Inflow) at time t_0	Outflow	NPV (Outflow) at t_0	AV (Inflow) at time 't'	AV (Outflow) at time 't'	Reserve by AV at time 't'	Reserve by NPV at time 't'	Change in Reserve
1	65%	100	7.83%	5.00%	24,261	1,213	628	0.50	62,752	61,240	-	-	64,302		64,302	64,302	64,302
2	75%	65	6.69%	5.05%	25,885	1,307	628	1.50	40,789	37,911	-	-	1,09,313		1,09,313	1,09,313	45,011
3	80%	49	6.44%	5.10%	27,551	1,405	628	2.50	30,592	27,079	-	-	1,46,126		1,46,126	1,46,126	36,813
4	85%	39	6.15%	5.15%	29,245	1,507	628	3.50	24,473	20,632	-	-	1,78,511		1,78,511	1,78,510	32,384
5	90%	33	5.84%	5.20%	30,954	1,611	628	4.50	20,802	16,702	53,389	42,865	2,08,752	54,708	1,54,045	1,54,045	-24,466
6	95%	30	5.51%	5.26%	32,660	1,716	628	5.50	18,722	14,316	51,205	39,154	2,38,374	1,09,913	1,28,462	1,28,462	-25,583
7	95%	28	5.16%	5.31%	34,345	1,823	628	6.50	17,786	12,952	51,667	37,626	2,68,518	1,68,351	1,00,167	1,00,167	-28,294
8	95%	27	4.80%	5.36%	35,992	1,929	628	7.50	16,897	11,719	51,952	36,032	2,99,258	2,30,004	69,254	69,254	-30,913
9	95%	26	4.42%	5.41%	37,584	2,035	628	8.50	16,052	10,603	52,052	34,382	3,30,670	2,94,841	35,828	35,828	-33,426
10	95%	24	4.04%	5.47%	39,103	2,138	628	9.50	15,249	9,593	51,962	32,688	3,62,829	3,62,829	0	-	-35,828
										2,22,745		2,22,745					0

Note: Formulae, notes and assumptions can be seen in attached excel file. Microsoft Excel Worksheet

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CHALLENGES

Few Challenges in this respect are given below:

Data: Availability of high quality relevant data in adequate quantity is a big challenge.

Resources: If done properly, this task may consume lot of bandwidth of actuarial team.

Low Priority: This may come as a low priority item in the overall list of management.

Adverse impact on immediate profits: Whenever implemented this may adversely affect the profits in the initial years even if implemented in phased manner

Complexity: Computation and maintaining this reserve may be quite complex practically when done for each such benefit in different products and for different policy years.

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CONCLUSION

Implementation of Deferred Benefit Reserve can not be done over night. Important point is to appreciate it and start measuring it even if a separate reserve is not set aside.

A disciplined approach in this regard will help in monitoring the performance of portfolio and risk adequate pricing.

Some sort of automation or reserving software will be helpful to do it systematically if the volume is large.

Collection of data in proper formats with sufficient details should start as soon as possible and will go a long way in technical pricing, reserving and portfolio analysis.

To begin with a broad brush approach to measure the exposure to such benefits will be helpful. We may just go by high level estimate at whole portfolio level without doing discounting of cash flows, etc. for each policy separately.

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Questions and Discussion