

Unit Pricing- Looking to it differently

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Abstract

The purpose of this paper is to look differently at the much-debated unit pricing in ULIP Business. The debate on unit pricing in Life Insurance Industry in India started after issuance of ULIP guidelines by IRDA in 2006. This is also an attempt to emphasize that the Actuarial Professionals succeeded to help other professionals in implementing the guidelines related to the unit pricing. The paper illustrates some numerical examples of unit pricing for expanding and contracting funds with and without Bid Offer spread. Further how the Insurer is affected is also shown in each example.

The paper has been divided into:

- Section 1- Introduction
- Section 2- What is unit pricing?
- Section 3- Calculating unit prices in practice
- Section 4- Frequency of pricing
- Section 5- Treatment of Taxes
- Section 6- Examples of unit pricing
- Section 7- Conclusion
- Section 8- Acknowledgment
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1. Introduction

- 1.1 The ULIPs were new life insurance products introduced after opening up of the insurance market for private players. The creation of units, cancellation of units and their pricing was limited mainly to mutual fund industry in India. The privatization of insurance helped movement of the various professionals from other industries towards insurance industry. These included professionals working in mutual fund industry as well. The unit pricing in mutual fund industry is governed by the SEBI guidelines. These guidelines are simple in nature and their implementation is also simple.
- 1.2 The IRDA guidelines regarding unit pricing are different from SEBI guidelines and complicated to some extent as well. These are given in annexure A. The other professionals took their own time to appreciate the new guidelines. They had also to come out of their comfort zone. The Actuarial Professionals took the baton and helped other professionals successfully in understanding the guidelines and implementing them. This showed that Actuarial Profession look to the things differently and hence is unique. This exercise also removed the stigma put on the Actuarial Professionals that they are not the effective communicators. They were successful in replying the following questions, which were raised:
 - The guidelines issued are away from the practical approach used in the market,
 - There is no difference in NAV per unit when we round the figures,
 - Whole industry is adopting mutual fund practices,
 - The adopted practices are not challenged in the mutual fund industry, etc. etc.....In this paper I have gone to the basics of the topic and in the process was confronted with many issues, which may be beneficial for further understanding.

2. What is unit pricing?

- 2.1 The basic method of unit pricing is that to divide the assets of the fund(s) by the number of units. The complication arises in case there is need to allow for- dealing costs and stamp duty, price movements since last pricing and taxes.

3. Calculating unit prices in practice

- 3.1 There are many markets where two unit prices are calculated. Before issuance of ULIP guidelines in India, many companies were using two unit prices. These are –

3.1.1 Offer price- Price at which units are sold to the policyholder or in other words price, at which the client purchases units,

3.1.2 Bid Price- Price at which the units are redeemed.

3.2 The dual pricing is complicated and may be replaced by single pricing method. When units are sold or are purchased by the company, it may be necessary to create new units or cancel old ones. In this process the fundamental principle remains same- **the effect on remaining unit holders must be neutral**. Unit pricing calculations depends on whether the fund is expanding or contracting.

3.3 For calculating unit prices the first step is to calculate the value of the assets allowing for whether the **fund** is a net seller or net buyer of assets. Here important point is that we look at the fund level only.

3.4 In different markets of world there are three asset prices generally available- the price at which it buys assets, price at which assets are sold and mid market price. The mid market price is usually the arithmetic average of buying and selling prices.

Any of these three prices may be used to calculate the value of assets. The regulations of particular country may prescribe the use of particular price. However when the fund is expanding the use of buying price would be appropriate, and when the fund is contracting the use of selling price would be appropriate to value the assets. An alternative method could be suggested using mid market prices and adjust them whether fund is expanding or contracting. The use of mid market price shall lead to draft the policy terms and conditions of insurance policy in following way-

- Assets are valued at mid market prices,
- An adjustment between $1-a\%$ and $1+b\%$ can be applied to mid market price while calculating value of assets for pricing purposes. The a and b factors would reflect the **state of fund** whether fund is expanding or contracting **and** cost of purchasing or selling the relevant assets.
- Bid price = $(1-c\%) * \text{Offer Price}$,

3.5 The policy terms and conditions may be silent on valuation of assets (the company then may use their discretion to use any valuation of the assets) and further may alter the Bid offer spread.

- 3.6 Any of these methods can be used to achieve neutrality for the existing unit holders and choice in practice would be dictated by regular market practices. It is important to ensure that policy terms and conditions be framed in such a way that it allows the insurer to operate the way it intends to operate. Needless to mention that insurer has to operate within the framework of regulations and Act of country.

4. Frequency of pricing

- 4.1 In addition to above points enumerated, how frequently the unit pricing is to be done and which price is to be used also needs careful consideration. The frequency of unit pricing has direct impact on cost of the insurer. The prices could be used historic or forward prices. Using historic prices means that the price at which unit can be bought or sold is fixed for the specified period. The specified period depends on the frequency of the unit pricing. But there is possibility of selection against the insurer. Suppose prices are calculated on weekly then it gives window for either buying cheap or selling dear. Though it may be argued that in most situations the selection effect may be negligible and is lost in the rounding of the unit price; but the effect could be significant if asset values reduces sharply. The insurer needs to ensure that all clients are treated fairly.

- 4.2 The remedies could be –

- Postponing further encashment of units, ensure that Insurer has put such condition in the policy terms and conditions,
- Make good the losses suffered by the policyholders who do not encash their holdings, by injecting capital back into unit- linked funds. Though it would lead to direct negative impact on insurer's profitability but the general rule that **the effect on remaining unit holders must be neutral** is respected. The insurers could not respect it if regulations do not specify.
- Reduce the length of the fixed price period say daily or twice daily. But it is not always practical looking to systems processing resources.
- Use forward pricing. Under this mechanism, the unit price is calculated after all the transactions have been completed. This is disadvantageous to the client, as the prices at which he/she shall buy or sell the units are not accurately known at the time of purchase or sale.

5. Treatment of Taxes

- 5.1 The allowance for **tax on income** is simple while calculating unit price but tax on capital gains could be a complex exercise. The later part is relevant to the unit linked insurance funds operating in such countries where capital gain tax is payable within the unit linked funds. Here also the unrealized gains pose the difficulty. Assuming all the policyholders in a particular fund pulled out at same time, the assets need to be sold which shall lead to immediate capital gains tax liability. This tax due shall be deducted from value of assets before calculating the final unit price.

Leaving apart all pulling out of fund, if there is small net turnover of units then there is little or no need for realizing the assets. There is little or no capital gain tax liability. In effect the capital gains liability is deferred. The judgment may be applied how long the liability is deferred. This is usually allowed for in the unit price by using a lower rate of tax on unrealized gains. The need for monitoring the rate would arise. This is to be ensured that fund performance is neither exaggerated nor understated.

There may be possibilities that capital gains tax is not paid by unit-linked funds. Only policyholders are required to pay capital gain tax on surrender or on maturity of the policy. In this situation to adjust the prices for capital gain tax would not arise.

There is potential for inequity for policyholders taking out their policies at different times, when the capital gains tax is payable by the unit linked funds. Suppose unit price initially was Rs. 10 and the price one year later was Rs. 15. Suppose currently the unit price is Rs. 13, which includes an allowance for capital gains tax. The assumption made here is that number of units is stable during this period and most of the units were transferred from one policyholder to another. Thus the policyholder who purchased the policy at unit price of Rs. 15 got lower number of units and after allowing for capital gains the fund value go down.

6. Examples of unit pricing

6.1.1- No Bid offer spread, Expanding Fund

Mid market value	10000
Value at buying price	10005
Value at selling price	9995
Dealing cost of buying price	1%
Dealing cost of selling price	0.75%
Number of units	1000

6.1.2-no bid offer price, expanding fund

	1
Value at buying price	10005
Number of units	1000
Each unit price or it has asset worth	10.005
	2
Dealing cost 1% of assets at buying price	100.05
Total cost including dealing cost on buying	10105.05
Each unit price or it has asset worth	10.10505
Rounding up	10.106
Policyholder invests	1000
Policyholder will receive	98.95
How insurer is affected	
Buying price	990.01
Dealing Price	9.90
Total cost including dealing cost on buying	999.91
Amount received by Insurer	1000
Actual cost of creating unit	999.91
Profit falls due to rounding	0.09

6.1.3- 5% Bid offer spread Expanding fund

	1
Value at buying price	10005
Number of units	1000
Each unit price or it has asset worth	10.005
	2

Dealing cost	100.05	
Total cost on purchasing	10105.05	
Each unit price or it has asset worth	10.10505	
Offer Price as 5% Insurer charge	95%	
Offer price	10.63689	
Rounding up	10.637	
Bid Price	10.10505	
Round down	10.105	
Actual Bid offer spread	5.00%	
How is insurer affected		
Amount invested	1000	
Policyholder shall receive units	94.01147	94.01 (Rounded)
Buying price	940.5701	940.57 (Rounded)
Dealing cost	9.405701	
Total cost on purchasing	949.9758	949.98 (Rounded)
Profit to Insurer	50.02	
Profit in %Terms	5.002	
What happens when additional units are created		
Total units after investment	1094.01	
Buying Price	10945.57	
Dealing cost	109.4557	109.46 (Rounded)
Total cost of purchasing	11055.03	
Cost of purchasing per unit	10.10505	
Offer Price as 5% Insurer charge	10.6369	
Rounding Up	10.637	
The unit price is unchanged		

6.1.4

No Bid Offer spread, contracting fund

	1	
Value of asset at selling price	9995	
Number of units	1000	
Each unit has asset worth at selling price	9.995	
	2	
Dealing cost	74.9625	74.96 (Rounded)
Total proceeds on sale	9920.04	
The unit price	9.92004	
Rounded down price	9.92	
In case Policyholder wants to withdraw units	500	
The payment to client	4960	
How Insurer is affected		
The value of assets encashed	4997.5	
The dealing cost	37.48125	37.48 (Rounded)
Actual sale proceeds	4960.02	
Actual paid	4960	
Profit to Insurer	0.02	

6.1.5

5% Bid Offer spread, contracting fund

	1	
Value of asset at selling price	9995	
Number of units	1000	
Each unit has asset worth at selling price	9.995	
	2	
The dealing cost	74.9625	74.96 (Rounded)
Total proceeds on sale	9920.04	
Bid unit price per unit	9.92004	
round down	9.92	
Offer price	10.44215	
round up	10.443	
Actual Bid offer spread	5.01%	
The policyholder wishes to encash units	500	
Payment to client	4960	
How Insurer is affected		
Value of assets encashed	4997.5	
Dealing cost	37.48125	37.48 (Rounded)
Actual sale proceed	4960.02	
Payment to client	4960	
Insurer profit	0.02	

7. Conclusion

The Actuarial profession needs to grab the opportunity whenever it comes on the way and prove its relevance in front of other professionals. They also need to visualize the bigger picture along with the number crunching. The Senior Actuaries have the responsibility to carry with them the juniors with regard to what is happening around so that juniors also prove to be Good Actuary in future. The awareness of other fields other than the specific job, which they are performing, proves to be useful while discussing with other professionals. The paper is basic in nature, not related to my specific work area and written with the simple aim to look things differently.

8. Acknowledgment

I acknowledge the articles on unit pricing available from reinsurers in India and other insurers along with SEBI guidelines. I also acknowledge the contribution of my seniors and other professionals who allowed me to access the information, which in normal course would not find the way towards me.

9. Appendix

Annexure A

When Appropriation price is applied: The NAV of a Unit Linked Life Insurance Product shall be computed as: Market value of investment held by the fund plus the expenses incurred in the purchase of the assets plus the value of any current assets plus any accrued income net of fund management charges less the value of any current liabilities less provisions, if any. This gives the net asset value of the fund. Dividing by the number of units existing at the

valuation date (before any new units are allocated), gives the unit price of the fund under consideration.

When Expropriation price is applied: The NAV of a Unit Linked Life Insurance Product shall be computed as: Market Value of investment held by the fund less the expenses incurred in the sale of the assets plus the value of any current assets plus any accrued income net of fund management charges less the value of any current liabilities less provisions, if any. This gives the net asset value of the fund. Dividing by the number of units existing at the valuation date (before any units are redeemed), gives the unit price of the fund under consideration.

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