

Traditional Vs Market Consistent Product Pricing

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Executive Summary

This paper has twin objective of illustrating an approach to price products on economic basis (or the market consistent basis) and compare the results with that of traditional pricing basis. Four products including Unit Linked Plan, Term Assurance Plan, Single Premium Bond and Critical Illness Plan have been taken up for this purpose. The market consistent pricing results have been compared with the traditional pricing results. The key findings of the pricing exercise are as under:

- The profitability measured under market consistent methodology comes out to be significantly different when priced under traditional pricing methodology. The level of variation in profitability depends on the policy term, type of contract, significance of investment options and guarantees etc.
- Under market consistent pricing methodology, the product profitability may change significantly with the change in economic conditions and availability of additional information relating to lapses, mortality etc. It is, therefore, not only desirable but necessary to profit test the products quite frequently and if needed, pricing needs to be changed. The product management, therefore, becomes a key activity to ensure that the new business adds desirable value to the shareholders.

The key differences between traditional pricing and market consistent pricing methodology are as under:

	Traditional Pricing	Market Consistent pricing
Assets	Investment Return assumptions are based on management view. This leads to credit spreads capitalization at point of sale	No investment return assumptions necessary; the current risk free interest rate is assumed. This ensures that the credit spreads are not capitalized at point of sale
Liabilities	Statutory reserves are used in the calculation. Assumptions not consistent with capital markets. (e.g. use of historic volatilities for options and management view on interest rates).	Hedgeable risks valued consistent with financial markets. Valuation of non-hedgeable risks based on the cost of economic capital.
Capital	Solvency Margin as stipulated by IRDA	Economic capital. (only used for non-hedgeable risk to calculate required margins)
Valuation	Discounted distributable earnings. (e.g. allows a management view on market anomalies/inefficiencies)	Market Value of Liability at issue. (e.g. no management view allowed on market anomalies/inefficiencies)

1. Product Pricing

The product pricing and review is an important activity in the financial management of a life insurance Company. Currently most of the life insurance companies in India target profit margins based on the traditional pricing methodology. The product pricing on economic basis (also called market consistent basis) is a sophisticated method where risks are measured and priced in more comprehensive and accurate way. The market consistent pricing methodology, therefore, helps the Company to ensure that the new business creates value for shareholders and provides returns commensurate to risks undertaken under the business written.

The objective of the market consistent pricing methodology is to measure the risk exposure as consistently and objectively as possible, by striving to remove personal judgment from assumptions and replacing them with either observable benchmarks anchored in current market conditions or well defined methodologies for quantification of risks. Furthermore, market consistent methods also take into account all identified risks on a comprehensive and consistent basis. That means when a product is priced, this methodology ensures that no risk relating to the business is ignored in pricing products. In doing so, the market consistent pricing framework ensures that the cost to hold or hedge a risk is supported by the price charged for in the product.

It also provides the Company the unbiased information with which to make decisions, and facilitates proper evaluation of competing new business opportunities by comparing ideas on a level playing field as regard the risk and reward is concerned.

2. Product profitability Measures

There are number of measures to value the product profitability. In this paper, the value to shareholders from the new business is measured by the "Value of New Business (VNB)" as the percentage of annualized premium equivalent (APE). A new policy is profitable at policy issue if it has positive VNB or in other words it has negative value of net liabilities at issue i.e. the contract is an asset to the Company at the time of sale.

When VNB is calculated by using market consistent methodology, it's called Market Consistent Value of New Business (MC VNB). Under market consistent methodology, a new policy will be profitable if it has positive MC VNB (i.e. negative market value of liability at issue). That means, $MC\ VNB = -\ MVL$. Therefore, we need to calculate the market value of liabilities (MVL) at policy issue to examine whether a contract is profitable.

In this paper, we have taken the following four products to calculate the VNB under traditional basis and also under economic basis (market consistent basis):

1. Term Assurance Plan
2. Single Premium Bond

3. Critical Illness Plan
4. Unit Linked Endowment Plan

The key features of these plans are given in Appendix 1. Following model points have been taken to represent these 4 products. It may be noted that the model points given below may not reflect the expected policy mix of a company and hence the interpretation of pricing results will be limited to these model points only.

Model Points:

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Endowment Plan
Entry Age	35	45	35	35
Sum Assured	25,00,000	5,00,000	5,00,000	3,00,000
Annual Premium/ SP	6,850	1,00,000	2,050	20,000
Policy Term	25	10	25	25
Premium Payment Term	25	SP	25	15
Premium Frequency	Annual	-	Annual	Annual
VNB as a % of APE (Traditional Method)	20.8%	22.0%	19.3%	15.0%

Note: for single premium, annual premium equivalent (APE) is 10% of single premium.

The pricing assumptions used in the calculation of the VNB and MC VNB are given in Appendix 1.

The products have been priced to meet the profitability criteria under traditional methodology. The target VNB has been taken as around 20% for traditional products and 15% for unit linked product. There is no specific target for MC VNB for these products. The MC VNB has been calculated to see the deviations of the results by assessing the product profitability by another pricing technique, called ECM pricing technique.

As mentioned above, the key profitability target under market consistent pricing methodology is the MC VNB i.e. negative of Market Value of Liabilities (MVL). The main objective in market consistent pricing is to calculate the MVL.

3. Market Value of Liabilities (MVL)

Liability under a life insurance product is marketable or said to have the market observable value if it can be transferred to a **willing, rational, well-diversified counterparty in an arms length transaction under normal business conditions**. But for most of the life insurance contract liabilities, there is no deep and liquid market. So the key issue is how to determine the value of liabilities which is market consistent i.e. the capital market likes to see.

Given the practical limitations of getting the market observable value of liabilities, the alternate ways of modeling method to determine the market consistent value of liabilities are used.

Under market consistent pricing methodology, it is assumed that the financial market assumptions are objectively set based on current actual financial market conditions. The operating assumptions, which are entity specific, such as mortality, lapses, expenses etc. are taken as the best estimate values with no scope for personal judgments of the Company.

The CRO forum (the forum of Chief Risk Officers) of European countries has defined the Market Value of Liabilities in their recent paper on "Market Value of Liabilities of Insurance Firms" published in July 2008, as under:

"The CRO Forum defines the MVL as the market-consistent fulfillment cost to the insurer to meet its obligations to policyholders over time in the ordinary course of business. The MVL, therefore, represents the present value of the financial costs to an insurer that is obliged to meet those liability cash flows. The costs are comprised, inter alia, of policyholder benefits, expenses, tax payments and capital costs, net of expected future premiums and fees from the existing contracts. Whenever such obligations, or some component thereof, can be hedged through the financial markets, a valuation approach that is consistent with those markets should be applied. For risks that cannot be hedged, a margin for the cost of risk, which we refer to as the "Market Value Margin (MVM)", should be included."

"The CRO Forum believes that the market valuation of liabilities should adhere to the following general principles:

- All cash flows should be separated into hedgeable and non-hedgeable components and valued using either mark-to-market or mark-to-model approaches.*
- Components of the cash flow for which hedging instruments are available in the financial markets should be valued with reference to the prices of those instruments or using the same option pricing techniques and parameters that are used in valuing the hedge portfolio in the financial markets. This is consistent with contingent pricing methodologies that have been used by major banks and financial institutions since the 1970s and consistent with current practices in the financial services industry.*
- For components of the cash flow that are subject to non-hedgeable risks (both financial and non-financial) a mark-to-model adjustment (referred to as the Market Value Margin) should be added to the best estimate value of the cash flow.*
- The CRO Forum position is that the Cost of Capital approach to calculate risk margins provides a theoretically sound approach for valuing such cash flows while maintaining transparency and pragmatism.*
- The valuation approach should ensure transparency and comparability of the valuation across insurers and be based on the set of assumptions that characterize the liability that is being valued. Entity-specific assumptions should be made when projecting future cash flows so that the valuation reflects the particular characteristics of the portfolio in question*

- *In the ordinary course of business, insurance companies will normally retain insurance liabilities and will not transfer them to a third party. Therefore, the CRO Forum believes it to be more economically sound to value insurance liabilities on the basis that they are kept in the company's own portfolio, including the company's existing servicing platform and cost structure, rather than to base the valuation on a hypothetical transfer.*
- *Absent observable markets, it is appropriate and practical to use "own company" experience, underwriting and servicing costs for the estimation of certain liability cash flows. This is because in most cases the risks are specific to the portfolio of the insurer and there is no observable market to gauge these risks and costs against. In reality, any such transfer would be based on the same assumptions as the transferee equally needs to fulfil the obligations to policyholders.*
- *We note that the draft directive wording utilises the 'transfer' concept as the basis of valuation of technical provisions and subsequently defines how the calculation should be carried out. We believe that our approach is equally consistent with this basis when it is assumed that the whole entity is being transferred into an empty reference company. Both approaches can lead to similar conclusions when determining market consistent value for insurance liabilities. The Level 2 implementing measures will provide the opportunity to achieve consistency between the two approaches.*
- *Where the value of liabilities can not be determined by reference prices in the financial markets, liability cash flows should be discounted with the risk-free yield curve without reference to the expected earned rate on the assets backing liabilities or to the insurer's own credit risk.*
- *The appropriate risk-free yield curve should be derived from the swap curve and this curve should be used for both best estimate liability valuation and the market value margin valuation. Where the swap market is non-existent, illiquid or otherwise impaired a suitably liquid, equivalent risk-free yield curve may be used."*

4. Methodology for Calculating the MVL

As discussed above, the key component in market consistent pricing methodology is to calculate the market value of liabilities (MVL) because MC VNB is equal to the MVL at policy issue with opposite sign. Under market consistent framework, the MVL is the total amount of cash that changes hands between buyer and seller if the liabilities were sold in the market i.e. this methodology uses the "exit value" approach. Since in any buy/ sell transaction, it's highly likely that there is a tax liability (or a tax benefit) to the buyer or to the seller party, so the buyer/ seller party would like to consider the value of tax liability/ gain in addition to the transfer price of liabilities (TPL) while calculating the market value of liabilities. Therefore, for the seller;

$$\text{MVL} = \text{Transfer Price of Liabilities (TPL)} + \text{Transfer Tax on liability (TTL)}$$

The TTL measures the value of tax consequences of selling the liability at the transfer price.

In an insurance policy, some of the risks may be hedgeable and others non-hedgeable. The savings component and the best estimate operating liability cash flows can be replicated via financial instruments that are tradable in the market place. Other risks such as risk of fluctuations in claims, expenses, surrenders etc. are not hedgeable in the market place.

The product liabilities of an insurance contract can be broken down into its components as given below:

Market value of liability = Market value of Savings component (hedgeable risk)

- + Market value of financial options and guarantees (hedgeable risk)
- + Best Estimate value of Insurance risks (hedgeable risk)
- + Cost of economic capital required to be held for non hedgeable risks
- + Transfer Tax on Liabilities (TTL)

The first three components in the above expression of the MVL are usually hedgeable in the market place. These components can be valued by using a replicating portfolio of market traded financial instruments matched by the best estimate liability cash flows. The risk that the cash flows arising from insurance risks do not unfold as best estimate cash flows is a non-hedgeable risks (NHR). The NHR needs to be estimated separately by using market consistent methodologies. One such approach is to calculate the market value margin (MVM) for the non hedgeable risks which reflects the market value of the risks in the portfolio.

Treatment of Taxes:

The treatment of taxes would be transparent and straightforward if the Taxable Surplus were equal to the Economic Surplus (i.e. income derived using a market consistent framework). In reality, taxable surplus and economic surplus are rarely equivalent. Taxes impact MVL by increasing or decreasing the value of a liability. Transfer Tax on Liability (TTL) generates cash flows to or from the tax authority on sale and Transfer Price of Liabilities can be affected by a number of tax related items which are described below.

- *Permanent Tax Differences* create liability cash flows that are not included in the calculation of taxable income. These have to be taken account when measuring TPL.

Tax Timing Differences arise when the tax authority values liabilities differently than the market. This divergence has the potential to generate value that has to be measured in the TPL. The tax timing differences can be valued if the contract is sold where the tax base of the liability would not reset to transfer value when sold to a third party.

- *Tax Authority's Put Option* exists because the tax authority's sharing of risk with the company by taxing income is not complete. The tax authority can therefore be thought of as a special class of shareholder. If taxes were simply proportional to taxable income, there would be complete risk sharing with the tax authority (i.e. positive taxes in positive years, and receive tax (refund) in negative years). Risk sharing is not complete as the tax authority limits its downside exposure using mechanisms such as limits on Tax Loss Carry-forwards and Tax Loss Carry-backs. The worst-case tax factor accounts for incomplete risk sharing by taking a haircut from full worst-case tax benefits. In this paper it has been assumed that for tax losses, the value of tax credit will be 80% of the tax loss and the Company will lose 20% value of the tax credit.

Value of Hedgeable Risks

For traditional products, the value of hedgeable risks at a point of time would be the present value of benefits plus present value of expenses and commissions less present value of premiums. The cash flows are projected by using best estimate assumptions and discounted back by using the risk free interest rate. The interest rate swaps are normally used as the risk free rate. In India, the interest rate swap market is not deep and liquid, so we have used the G Sec bonds to estimate the current forward rates for discounting the cash flows.

For unit linked contracts, the value of hedgeable risks is the present value of non unit benefits plus present value of expenses and commissions less present value of charges emerging from the contracts. The cash flows emerging from the contracts are projected by using best estimate assumptions and discounted by using the risk free interest rate. It may be noted that the unit growth rate assumption to project the future unit fund values is also the risk free rate irrespective of where the actual fund will be invested. This is to ensure that the credit for any investment out performance over the risk free rate as a result of investing in riskier assets is not capitalized upfront.

The value of hedgeable risks for the 4 model points is given below:

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
Value of Hedgeable Risks	-6,042	8,047	-1,500	-10,133
Value of HR as % of Annual Premium	-88.2%	8.0%	-73.2%	-50.7%

It may be noted that the Single Premium Bond product has the positive value of hedgeable risks i.e. the contract has a net liability at policy issue and, therefore, it is loss making (even before allowing for the cost of non-hedgeable risks). Other three products have negative value of HR i.e. they are profitable before allowing the cost of non-hedgeable risk.

Value of Non Hedgeable Risks (NHR):

Non hedgeable risks could be financial NHR or non-financial NHR.

Non Hedgeable Financial Risks:

The financial risks where some cash flows cannot be replicated by the capital market instruments, such risks are non-hedgeable financial risks. Moreover, even the financial risks are hedgeable but perfect hedging is not possible in reality so there is always some element of financial non hedgeable risks. A few examples of non-hedgeable financial risks include:

- Interest rate risk associated with liabilities that have significantly longer durations than what is traded in the financial markets
- Equity volatility risk associated with options that are not available in the financial markets.
- Risks associated with replicating actively managed funds held for the unit linked policies.

The MVM for non-hedgeable financial risks are modeled and valued separately on a market consistent basis.

Non Hedgeable non-Financial Risks:

Non-hedgeable non-financial risks are those financial risks which are not traded in a deep and liquid market. These include typical insurance risks, such as policyholder mortality, morbidity, policyholders' behavior, operational risks etc.

The insurance risks can be typically broken down into 2 components - best estimate and the risky components. The best estimate component is accounted for in the hedgeable risks because the best estimate cashflows can be replicated by financial traded instruments. The risky components reflect the risk that actual outcome may be adverse from the best estimate and are accounted for through the market value margin (MVM).

5. Calculation of Economic Required Capital:

Economic Required capital (ERC) is the level of capital required to ensure a given level of economic solvency, say at a probability of 0.995, in a given time period, say 12 months from the valuation date. ERC can be calculated using a Value at Risk (VaR) methodology which considers the change in economic value of the contracts between the market value/ best estimate value and the value in the worst-case scenario. The economic solvency means the Company is solvent if the market consistent value of assets is higher than the market consistent value of liabilities under worst shock scenario.

To value the non-hedgeable risks in market consistent pricing, the worst case shocks have been applied to the following risks which are significant in the products taken up for this paper:

- Mortality and morbidity risk
- Lapse risk
- Investment mismatch risk
- Operational risks

The level of the worst case shocks for these risks are determined based on the internal research models which are updated and market consistent. We have used the following level of shocks in this paper:

Risk Parameter	Shock	Amount of Risk for Traditional Plans	Amount of Risk for Unit Linked Plan
Mortality/ Morbidity Parameter Risk	+ 30% × q _x for all years of projection	PV of Premiums less PV of benefits and expenses, under best estimate assumptions MINUS PV of Premiums less PV of benefits and expenses, under mortality/ morbidity up shock;	PV of Charges less PV of benefits and expenses payable from non unit fund, under best estimate assumptions MINUS PV of Charges less PV of benefits and expenses payable from non unit fund, under mortality/ morbidity up shock
Mortality/ Morbidity Contagion Risk	Mortality/ morbidity rate increases by 0.002 in next one year from valuation date	Sum Assured plus PV of premiums less benefits and expenses; multiplied by extra mortality/ morbidity rate for one year	Sum at Risk (i.e. death benefit from non unit fund) plus PV of charges less benefits and expenses; multiplied by extra mortality/ morbidity rate for one year
Lapse Parameter Risk	± 50% times lapse rate of respective year	Loss in PV of Premiums less PV of benefits and expenses, due to lapse up/ down in all years; adjusted for no of policies under base scenario	Loss of PV of Charges less PV of benefits and expenses, due to lapse up/ down in all years
Lapse Contagion Risk	± 10% lapses out of inforce policies in one year after the valuation date	Surrender Value PLUS Loss of PV of Premiums less PV of benefits and expenses, due to lapse up/ down in next 12 months from date of valuation	Loss of PV of charges less PV of benefits and expenses, due to lapse up/ down in next one year from the date of valuation
Operational Risk (OR)	+1% capital budget for Traditional Plans; +2% budget for ULIP	PV of benefits and expenses under best estimate assumptions	PV of unit fund values
Mismatch Risk	+1% capital budget for both unit linked products	PV of premiums less benefits and expenses under best estimate assumptions	PV of charges less expenses and benefits payable from non unit fund under best estimate assumptions

Diversification of Risks

Once economic required capital (ERC) has been calculated for each risk we need to aggregate individual ERC amounts. Aggregation is not a simple addition of individual ERC amounts. We might have opposite exposures that lead to offsets where a positive ERC amount might be offset by a negative ERC amount associated with the same risk. Also it is quite possible that all worst case shocks typically do not happen at the same time. Therefore, the

ERC for two worst case shocks combined is often less than the simple sum of the two respective individual ERC amounts. This effect is called diversification.

The diversification factors are applied to get the benefit of diversification of risks within the risk and between the risks. The diversification factors in the calculation of ERC have been taken as under:

- Mortality parameter risk (81.25%);
- Mortality Contagion Risk (25%);
- Lapse Parameter Risk (87.5%);
- Lapse Contagion Risk (25%);
- Operations Risk (75%);
- Investment Mismatch Risk (15%)

6. Calculation of the Market Value Margin (MVM)

Market value margin is the amount that the buyer of liabilities will consider in the price to accept the risks of cash flows turning out to be adverse than the best estimate cash flows. The CRO Forum of European companies believes that *“ the Cost of Capital approach to calculate risk margins provides a theoretically sound approach for valuing such cash flows while maintaining transparency and pragmatism”*.

This paper also adopts the same approach i.e. the cost of capital approach to calculate the risk margins (market value margins). For each risk the MVM has been calculated separately and the consolidated MVM has been used to arrive at the MC VNB. While consolidating, the benefit of diversification of risks as discussed above has been taken so that the consolidated risk is not over valued.

Calculation of MVM for Mortality/ Morbidity Risks: (Gross of Diversification factors)

MVM for mortality risk = (PV of best estimate of liabilities – PV of liabilities under mortality worst shock assumption) × rate of cost of capital

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Plan
MVM for Mortality/ Morbidity parameter shock	1,387	225	559	41
MVM for Mortality/ Morbidity Contagion shock	4,625	439	921	431

Total MVM - Mortality/ Morbidity Risks	6,012	664	1,481	472
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Calculation of MVM for Lapse Risk

For Unit Linked Products:

MVM for lapse contagion risk = (PV of charges - PV of benefits from non unit fund – PV of expenses) on best estimate basis × rate of cost of capital

For Traditional products:

MVM for lapse contagion risk = (PV of premiums - PV of benefits – PV of expenses + Surrender Value) × rate of cost of capital charge

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
MVM under Lapse parameter shock	413	371	220	354
MVM under Lapse Contagion shock	93	2,611	8	966
Total MVM – Lapse Risk	507	2,982	228	1,320

It may be noted that higher lapses is a risk in Unit Linked Plan model point and lower than expected lapses is a risk in other 3 model points.

Calculation of MVM for Investment Mismatch Risk

MVM for Investment mismatch risk = 1% of PV of Premiums less benefits & expenses;

The expected liability cash flows emerging from the products taken up in this paper can be closely matched with risk free assets available in the market place. It is, therefore, assumed that these products will have very low degree of investment mismatch risk and hence a low mismatch risk has been assumed.

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
MVM for Investment Mismatch Risk	11	822	1	109

Calculation of MVM for Operational Risk

Unit Linked Plan: Sum of 2% of unit fund values multiplied by cost of capital charge;

Traditional Plan: 1% of PV of benefits and expenses multiplied by cost of capital charge;

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
MVM for Operational Risk	72	244	27	483

7. MC VNB Calculations

Item	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
A. Hedgeable Risks				
HLV	-6,042	8,047	-1,500	-10,133
B. Non Hedgeable Risks				
MVM for Mortality/ Morbidity Parameter Risk	1,387	225	559	41
MVM for Mortality/ Morbidity Contagion Risk	4,625	439	921	431
MVM for Lapse Parameter Risk	413	371	220	354
MVM for Lapse Contagion Risk	93	2,611	8	966
MVM for Investment Mismatch Risk	11	822	1	109
MVM for Operational Risks	72	244	27	483
Total MVM	6,602	4,711	1,737	2,384

<i>C. Tax Consequences</i>				
Transfer Tax on liabilities (TTL)	-190	-4,337	-80	2,634
Value of Tax Liability Timing difference (VLTD)	352	1,288	38	-2,669
Total impact of tax consequences	162	-3,048	-42	-35
Market value of Liability (MVL)	721	9,710	194	-7,784
MC VNB	-721	-9,710	-194	7,784
MC VNB as % of annual Premium	-10.5%	-97.1%	-9.5%	38.9%
Traditional VNB as % of annual Premium	20.8%	22.0%	19.3%	15.0%
Difference in VNB as % of Annual Premium	-31.3%	-119.1%	-28.8%	23.9%

8. Conclusion

- The market consistent value of new business changes with change in financial market conditions. In times of rapid changes in the financial market conditions, the product pricing needs to be reviewed very frequently to ensure that rewards from the new business are commensurate with the risks.
- It is observed that products where the cash flows are mismatched by timing i.e. the timing of revenue (premium/ charges) is different from timing of outgo (benefit payments, expenses etc.), such products are more sensitive to change in economic conditions than those where cash flow timing are relatively matched. Therefore, the risk of changes in the financial market conditions can be reduced by designing the price structure in such a way that the cash flow income/outgo timing are relative lesser mismatched.
- It has been observed that in many cases, the product pricing does not truly reflects the risks inherent in the products. It is possible that some products demonstrate very attractive profitability on traditional basis but show negative economic profitability.

- It has also been observed that low risk products such as unit linked products without guarantees shows higher economic profit compared to traditional profit.
- The value of new business is not affected by expected asset mix of the product liabilities. Higher than risk free investment return on the riskier assets such as corporate bonds and equities is not capitalized in market consistent pricing. The higher return emerging from riskier assets is not accounted for until the risk unfolds.
- Product designing and pricing is a key element in the capital management of the Company. For those products where there is high potential of cash flow variations from best estimates, higher economic capital would be required. So the management, while formulating the capital management strategy, may take appropriate decisions on which product line they should focus to, considering the risk reward balance.

Appendix 1:

A. Product Key Features

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
Benefit Payable on Death	Sum Assured	5 times the Single Premium	Sum Assured	Higher of Sum Assured & Fund Value
Benefit Payable on Maturity	Nil	2 times the Single Premium	Nil	Fund Value
Surrender Value	Nil	The SV is Return of SP with 4% compound interest	Nil	Fund Value less surrender penalty Policy Year Penalty as % of fund value Y1 100% Y2 50% Y3 20% Y4 5% Y5+ Nil
Non-Forfeiture Provisions	Policy Lapses after grace period of 30 days from premium default date	NA	Policy Lapses after grace period of 30 days from premium default date	First 3 policy years: policy lapses and surrender value paid After 3 policy years: Policy continues as fully paid-up

B. Pricing Assumptions - Traditional Pricing

Product	Term Assurance Plan	Single Premium Bond	Critical Illness Rider	Unit Linked Product
<i>Economic Assumptions</i>				
Unit Growth rate	NA	NA	NA	10%
Earned Rate	6.5%	9.5%	6.5%	6.5%
Interest Rate on Solvency Margin	7.5%	7.5%	7.5%	7.5%
Risk Discount Rate	15%	15%	15%	15%
MAD for valuation	±10%	±10%	±10%	±10%
Tax on Surplus	33.99%	33.99%	33.99%	33.99%
<i>Acquisition Expenses</i>				
Fixed	2000	700	100	1000
% of Premium	10%	1%	10%	10%
% of Commission	50%	50%	50%	50%
<i>Maintenance Expenses</i>				
Fixed	250	200	-	400
% of Premium	1%	0%	1%	1%
% of Fund/Reserve	0.1%	0.1%	0.1%	0.3%
Expense Inflation	5%	5%	5%	5%
<i>Commission</i>				
Initial	25%	2%	25%	25%
Renewal	4%	NA	4%	2%
<i>Mortality/ Morbidity Rates (% of IAL 1994 – 96 table)</i>				
Mortality/ Morbidity Rates (%of IAL 94-96)	70%	70%	CI incidence rates table	70%
<i>Policy Lapse/ Surrenders</i>				
Year 1	25%	2%	20%	20%
Year 2	8%	2%	8%	8%
Year 3+	7%	3%	7%	7%
<i>Solvency Margin</i>				

% of Reserves	4.5%	6%	6%	1.5%	
% of Sum at Risk	0.15%	0.45%	Nil	0.45%	
Charges					
Fund Management	NA	NA	NA	1.5%	
Policy Administration	NA	NA	NA	600 (inflat. @ 5% p.a)	
Mortality	NA	NA	NA	100% of IAL 94-96 table	
Premium Allocation Charge	NA	NA	NA	Year	%
				1	40%
				2	2%

C. Pricing Assumptions – Market Consistent Pricing

Market Consistent Operating Assumptions have been taken as the same best estimate assumptions as given in Table B above. For risk free discount rate, the forward rates, as given below, have been derived from the G Sec yield curve as at 30th Nov 2008.

Year	Forward Interest Rates	Year	Forward Interest Rates	Year	Forward Interest Rates
1	6.87%	11	7.15%	21	7.97%
2	6.93%	12	7.38%	22	8.00%
3	7.00%	13	7.62%	23	8.04%
4	7.07%	14	7.85%	24	8.08%
5	7.13%	15	8.09%	25	8.12%
6	7.21%	16	8.06%	26	8.15%
7	7.29%	17	8.03%	27	8.19%
8	7.16%	18	7.99%	28	8.23%
9	7.04%	19	7.96%	29	8.26%
10	6.91%	20	7.93%	30	8.30%