

# Life Assurance as a Form of Investment for an Individual — A Case Study [Final Part]

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This article will discuss the way of maximising wealth creation, both by a tax payer and by a non tax payer, by carefully selecting and investing in a life assurance scheme.

The first part of this article which appeared in May/June Issue discussed the development of life assurance, the role of life assurance and the product range available in the market.

## VI. CASE STUDY ASSUMPTIONS & APPROACH

### 6.1 Assumptions

The following assumptions were made in the analysis:

(1) The policyholder obtained a policy for self. The policy obtained was neither a joint policy nor in favour of another individual (ex. child). Hence the under-mentioned schemes were excluded from the analysis.

TABLE VI-1

#### SCHEMES IGNORED DUE TO INABILITY OF OBTAINING A POLICY FOR SELF

Organization	Scheme
ICSL	Marriage Endowment Policy Educational Annuity Joint Endowment Assurance Mortgage Protection Assurance
NIC	Joint Life Endowment Assurance
CEY	n/a
UAL	Child Welfare Benefit Policy
CTC	n/a

(2) The maturity value at the end of the term of the policy was Rs. 100,000/-. Age at which the policy was taken is 25 years.

(3) The term elected by the policyholder was 25 years. Hence the following policies did not fall into the analysis since they do not offer a term of 25 years.

TABLE VI-2

#### SCHEMES IGNORED DUE TO MAXIMUM POLICY TERM

Organization	Scheme
ICSL	Three Stage Policy
CTC	Dashaka Policy Ranpatha Policy

(4) It was assumed that when schemes falling under Category II & III were elected, the death of policyholder occurred at the end of the term. This assumption is made to standardize the comparison of policies, since no maturity

value but only a sum assured is available on Schemes II & III.

(5) No supplementary benefit was elected by the policyholder (even if a given scheme offered) when taking up a policy.

(6) The policyholder belonged to the standard category of occupation (standard risk).

(7) The policyholder belonged to the correct weight range in relation to the policyholder's age at the time the policy was obtained & will pay the standard premium stipulated by a given scheme.

(8) The policyholder paid the premium annually in advance. The policyholder enjoyed any discounts given for a given scheme when premium was paid annually.

The policyholder paid the premium in due time & avoided any penalty charges for delays in premium payment.

(9) The policyholder did not surrender the policy before the expiry of the term of the policy. The policyholder continued to pay the premium till the end of the elected term.

(10) The policyholder did not elect any grace period once the policy is begun.

(11) Whenever & wherever the policyholder received the maturity sum in instalments during the term of the policy (Category V), such instalment money was re-invested in a fixed deposit till end of the term of the policy.

Such money invested in a fixed deposit was continuously reinvested with the capital & the interest accrued at the end of every year till the end of the term of the policy.

The average fixed deposit interest rate is 16% per annum.

(12) The average general inflation rate was taken as 11.6% per annum.

TABLE VI-3

AVERAGE CONSUMER PRICE INDEX		
Year	Index	Rate
1977	203.20	-
1978	227.80	12.11%
1979	252.30	10.76%
1980	318.20	26.12%
1981	375.40	17.98%
1982	416.10	10.84%
1983	474.20	13.96%
1984	553.10	16.64%
1985	561.20	0.146%
1986	606.00	0.798%
1987	652.80	0.772%
1988	744.10	13.99%
1989	830.20	11.57%
Total		151.13%
Average Rate per annum		12.59%

Source: Central Bank of Sri Lanka, Annual Report, 1989.

(13) The mortality rates were assumed to follow the following pattern. The mortality rates depicted were based on data collected in the USA (Mortality rates for respective ages are not available for Sri Lanka).

TABLE VI-4

MORTALITY RATES FOR DIFFERENT AGE GROUPS			
Age (Yr.)	Mortality (%)	Age (Yr.)	Mortality (%)
25	0.193	41	0.384
26	0.196	42	0.417
27	0.199	43	0.453
28	0.203	44	0.492
29	0.208	45	0.535
30	0.213	46	0.583
31	0.219	47	0.636
32	0.225	48	0.695
33	0.232	49	0.760
34	0.240	50	0.832
35	0.251		
36	0.264		
37	0.280		
38	0.301		
39	0.325		
40	0.353		

Source: Mehr, R. I. & Cammack E., *Principles of Insurance*, 1961, p. 761, Richard D. Erwin, Inc.

(14) When the policyholder was a tax payer the premium paid into the policy, if allowed as a qualifying payment, was able to deduct in full, and fell into the tax bracket of 10%.

### 6.2 Approach

(1) The Life Assurance Policy obtained by the policyholder was viewed as the entity for the analysis. The policyholder was considered as the investor. The premium paid to the Insurance Organization under a given policy is treated as

a cash outflow & any cash received (ex. maturity value) and any benefit enjoyed which could be quantified (ex. life cover enjoyed calculated for a given year as a function of the mortality rate for that given year) by the policyholder is treated as a cash inflow.

(2) Whenever the maturity value was received by way of instalments such money received was reinvested in outside the insurance market (ex. in a fixed deposit) till the end of the term of the policy.

(3) The Discounted Cash flow Technique (DCF) was used to compare the different schemes to adjudge their financial strength. All schemes were evaluated using the Net Present Value (NPV) & the Internal Rate of Return (IRR) techniques.

The NPV will reveal the extent of additional wealth created in real term once adjusted for the depreciation in money value. The IRR will demonstrate the rate at which the wealth is created after adjusting for the depreciation in money.

## VII. ANALYSIS FOR A NON-TAXPAYER

The policyholder is a non tax payer. The cash outflow was the payment of premium and the cash inflows are maturity value and the life cover enjoyed during the term of the policy. The cash flows were adjusted for loss of money value by time. The following features were identified under each category.

### CATEGORY I

Only UAL & CTC offer one scheme each. A policy can be obtained by paying the lowest premium.

However since the premium paid was not refunded to the policyholder, the only benefit to the policyholder was the consumption of the life cover.

Since the premium paid at each year was greater than the death benefit consumed and further that no maturity value was paid at the end of the term of the policy, the IRR was less than zero.

Since the premium investment was the lowest, the loss of money (real term) was lower compared with schemes in other categories. This is shown by the net cash inflow & by the NPV value after adjusting for an average inflation rate of 12.6% per

annum. The Union Family Benefit scheme of UAL showed a lesser negative NPV out of the two schemes.

### CATEGORY III

In the schemes falling under this Category, the premium payment was rela-

TABLE VII-1

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY I					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY I					
ICSL	n/a				
NIC	n/a				
CEY	n/a				
UAL	Union Family Benefit Policy	423.00	-1079.00	-1413.20	- 2.48%
CTC	Convertible Term Policy	437.00	-1429.00	-1518.60	-38.23%

### CATEGORY II

In the schemes coming under this category the premium was supposed to be paid till the occurrence of death. Since the premium is refunded with the death of the policyholder, the premium payable in the schemes falling under this Category is higher than those schemes falling under Category I.

Since the policyholder survives during the term of the policy, the policyholder shall enjoy the potential death benefit, since it was the assumed that policyholder would die at the end of the term of the policy, the premium paid is refunded which in fact is a tangible monetary benefit.

The premium payment outweighs the death benefit enjoyed & the money received at the end of the policy (in real money value) and the IRR is less than zero.

Since the premium paid is relatively high as compared with Category I, the loss of money after adjusting for inflation is higher than Category I, as shown by NPV & net cash inflow. The whole life Policy of NIC & the Whole Life Policy of CEY share the same rank as the policy showing the negative NPV.

tively higher when compared with the Category II, since the premium was to be paid only for a defined term, as against up until death.

The IRR was below zero indicating that the tangible & intangible monetary benefits were lower than the premium paid.

The loss of money was greater than in Category II due to higher premium as shown by net cash inflow & the NPV. The least negative was Limited Payment Whole Life Policy of NIC followed by Limited Payment Life Assurance Policy of ICSL.

### CATEGORY IV

In the schemes falling into this Category the premium paid was higher than in the Category I, II & III but lower than in Category V, VI & VII. However the return on the investment was not adequate enough to beat the inflation. However these schemes yielded a better return than those schemes falling under all except Category VII.

### CATEGORY V

In the schemes followed under this category, the premium payable is higher than in Categories I, II & III. Dashaka Policy & the Ranpatha Policy offered by

TABLE VII-2

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY II					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY II					
ICSL	Whole Life Assurance	1390.50	-25266.50	- 8696.57	- 3.23%
	Convertible Life Assurance	3281.00	-20104.00	- 7142.03	-38.23%
NIC	Whole Life Policy	1184.00	-20104.00	- 7142.03	-38.23%
CEY	Whole Life Policy	1853.44	-36840.00	-2181.60	-57.76%
UAL	n/a				
CTC	n/a				

CTC are not available for a term of 25 years.

Except for the Pure Endowment Policy, Double Endowment Assurance,

Multi Purpose Assurance, Podhu Jana Rakshana Plan of Assurance & the Treble Benefit Assurance offered by ICSL, all other schemes showed a positive IRR.

However NPV of all the schemes falling into this category show negative figures. The least negative was the Piripun Policy of CTC followed by the Pure Endowment Policy of NIC.

**TABLE VII-3**

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY III					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY III					
ICSL	Limited Payment Life Ass.	1936.75	-38922.75	-12808.76	-59.42%
NIC	Limited Payment Whole L.	1184.00	-20104.00	- 7142.03	-38.23%
CEY	Whole Life Policy	2342.88	-49076.00	-15866.12	-66.00%
UAL	n/a				
CTC	n/a				
n/a not applicable.					

**TABLE VII-4**

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY VII					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY IV					
ICSL	Pure Endowment	2170.25	49112.67	-11385.51	4.7%
NIC	Pure Endowment	2368.00	44475.89	-12839.43	4.1%

**TABLE VII-5**

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY V					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY V					
ICSL	Endowment Assurance	3024.50	33883.50	-16426.47	2.9%
	Double Endowment Assur.	5385.25	-25135.25	-34198.26	-1.7%
	Multi Purpose Assurance	5385.25	-25135.25	-34198.26	-1.7%
	Podhu Jana Rakshana Plan	2605.00	44371.00	-13268.46	4.1%
	Treble Benefit Plan of Ass.	3010.00	- 6258.00	-16831.61	-0.8%
NIC	Endowment Assurance	2900.80	36976.00	-15495.25	3.3%
CEY	Endowment Assurance	3621.68	18954.00	-20922.06	1.5%
UAL	Endowment Assurance	3440.00	23496.00	-19554.37	1.9%
CTC	Dashaka Policy	ERR	ERR	ERR	ERR
	Piripun Policy	1262.50	9901.98	- 6271.74	2.4%
	Ranpatha Policy	ERR	ERR	ERR	ERR.

**TABLE VII-6**

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY VI					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	IRR %
CATEGORY VI					
ICSL	Jana Setha Assurance	10742.00	-218869.68	-76757.97	-8.0%

**CATEGORY VI**

There is only one scheme under this Category. A unique feature in this policy is that the death benefit increase every year by 5% of the previous year. Hence the potential death benefit that can be enjoyed increase as well.

However both IRR & NPV show negative figures & in general the loss of wealth is greater in this category as compared with Category V.

**CATEGORY VII**

The Three Stage Policy offered by ICSL was not available for a term of 25 years. The premium payable were highest in the schemes falling under this category. All the schemes under this category showed positive IRRs. In addition to enjoying life cover benefit these policies also offered an opportunity to invest money outside the life assurance market, by paying off the maturity value instalments.

The Supper Benefit Policy of UAL showed the highest IRR & the NPV values. Hence the policyholders wealth can be maximized (in real terms) Super Benefit Policy of UAL followed by the Advanced Payment Policy of CEY.

**VIII. ANALYSIS:  
FOR A TAX PAYER**

It was further assumed that the policyholder was a tax payer. The premium payable fell into the minimum tax slab of 10% & can be set off in full as a qualifying payment under the said tax bracket. The policyholder obtained a tax deduction to this effect & the tax deduction was effective in each year in which the premium is paid. The tax rebate obtained by the policyholder thereby helped to improve the financial worth of given scheme.

Since the premia paid into the Pure Endowment Schemes are not allowed as a qualifying payment, this fact was taken care of in the analysis carried out for a tax payer.

## CATEGORY I

The IRR of the schemes under this category were still below zero. However a loss of wealth in real term was still experienced due to inflation though somewhat eased for tax payer.

## CATEGORY II

The IRR and the NPV value were still less than zero, though the cash inflow situation had improved as against for a non tax payer.

## CATEGORY III

As in the Category II the IRR and the NPV values were negative.

## CATEGORY IV

Since the premium paid on Pure Endowment schemes are disallowed as a qualifying payment for the purpose of taxation, the tax payer did not command an additional benefit as against a non tax payer.

## CATEGORY V

The Endowment Assurance Scheme of ICSL provided for an increase of wealth in real term. All other schemes though showed an improvement in the position of wealth, failed to give a satisfactory increase.

## CATEGORY VI

In spite of the tax benefit enjoyed by the policyholder a loss of wealth was experienced.

## CATEGORY VII

As in the case for a non-tax payer, the Super Benefit Policy of UAL maximized the status of wealth followed by the Advanced Payment Policy of CEY. Both these schemes were given a higher return than the fixed deposit interest rate.

## IX. CONCLUDING REMARKS

Only a specific sum assured (Rs. 100,000); an age of entry (25 years of age), a specific term (25 years) was selected for the analysis. However depending of the age of entry, the sum assured, the term, the types of supplementary benefits elected & on the availability of a given scheme, the financial worth of a given scheme may vary.

The schemes falling under Category II were assumed to have a policy term of 25 years. However under normal circumstances this scheme warrants the policyholder to pay the premium till the time of the death. When considering the schemes falling under Category III an assumption was made that the policyholder shall die just before the expiry of the policy and the nominee of the policyholder shall obtain the due sum assured.

TABLE VII-7

SUMMARY OF RESULTS FOR A NON TAX PAYER					
CATEGORY VII					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY VII					
ICSL	Three Stage Policy	ERR	ERR	ERR	ERR
NIC	Anticipated Endowment Policy	4424.00	254441.95	847.15	12.9%
	Multi Benefit Policy	3320.00	145953.40	-10281.69	8.8%
CEY	Advanced Payment Policy	5464.64	505337.34	27843.82	19.5%
	Five Benefit Policy	4417.68	183776.35	- 6504.46	10.4%
UAL	Super Benefit Policy	6085.00	438565.38	ERR	ERR

TABLE VIII-1

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY I					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY I					
ICSL	n/a				
NIC	n/a				
CEY	n/a				
UAL	Union Family Benefit Policy	423.00	- 21.50	-1130.40	- 0.05%
CTC	Convertible Term Policy	437.00	-336.50	-1226.43	-30.91%

TABLE VIII-2

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY II					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY II					
ICSL	Whole Life Assurance	1390.50	-21790.25	- 7766.93	- 0.78%
	Convertible Life Assurance	3281.00	-17144.00	- 6350.45	-30.91%
NIC	Whole Life Policy	1184.00	-17144.00	- 6350.45	-30.91%
CEY	Whole Life Policy	1853.44	-32206.40	-10942.45	-48.81%
UAL	n/a				
CTC	n/a				

TABLE VIII-3

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY III					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY III					
ICSL	Limited Payment Life Ass.	1936.75	-14080.87	-11513.92	-50.38%
NIC	Limited Payment Whole Li.	1184.00	-17144.00	- 6350.45	-30.91%
CEY	Whole Life Policy	2342.88	-43218.80	-14299.75	-56.68%
UAL	n/a				
CTC	n/a				
n/a — not applicable.					

Going by the assumptions made & the rationale used, the schemes under Category VII are the best for maximization of wealth. The best schemes were the Super Benefit Policy of UAL followed by Advanced Payment Policy & then the Apeksha Policy of CTC. Schemes under

all the other categories showed a loss of wealth once adjusted for an average inflation rate of 12.6% per annum. However Category IV can be chosen as the next best.

Whilst taking into account the life cover that can be enjoyed during the

term of the policy, it appeared that the Super Benefit Policy of UAL, the Advanced Payment of CEY & the Apeksha Policy of CTC provide a higher rate of return than the average market interest rate (which was taken as 16% per annum).

However the qualitative factors such as efficiency of an Insurance Organization, the after sales service, the speed of paying out dues, how a prospective perceives the stability of a given Insurance Organization, the ability to pay a given premium by a prospective, were all ignored in this analysis. The decision of selection of a scheme for a prospective policyholder may be greatly influenced by such qualitative factors.

TABLE VIII—4

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY IV					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	IRR %
CATEGORY IV					
ICSL	Pure Endowment	2170.25	49112.67	-11385.51	4.7%
NIC	Pure Endowment	2368.00	50296.00	-11484.32	4.8%

TABLE VIII—5

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY V					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	IRR %
CATEGORY V					
ICSL	Endowment Assurance	3024.50	41444.75	-14404.40	3.7%
	Double Endowment Assur.	5385.25	-11672.13	-30597.88	-0.8%
	Multi Purpose Assurance	5385.25	-11672.13	-30597.88	-0.8%
	Podhu Jana Rakshana Plan	2605.00	50883.50	-11526.85	4.8%
	Treble Benefit Plan of Ass.	3010.00	1267.00	-14819.23	0.2%
NIC	Endowment Assurance	2900.80	44228.00	-13555.88	4.0%
CEY	Endowment Assurance	3621.68	28008.20	-18500.73	2.3%
UAL	Endowment Assurance	3440.00	32096.00	-17254.51	2.7%
CTC	Dashaka Policy	ERR	ERR	ERR	ERR
	Piripun Policy	1262.50	13058.23	- 5427.67	3.3%
	Ranpatha Policy	ERR	ERR	ERR	ERR

TABLE VIII—6

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY VI					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	IRR %
CATEGORY VI					
ICSL	Jana Setha Assurance	5371.00	-95336.68	-34224.75	-0.5%

TABLE VIII—7

SUMMARY OF RESULTS FOR A TAX PAYER (TAX RATE 10%)					
CATEGORY VII					
Insurance Organisation	Name of Scheme	Annual Premium (Rs.)	Net Cash Inflow (Rs.)	NPV @ 12.6% (Rs.)	FIRR %
CATEGORY VII					
ICSL	Three Stage Policy	ERR	ERR	ERR	ERR
NIC	Anticipated Endowment Po.	4424.00	265501.95	3804.88	13.8%
	Multi Benefit Policy	3320.00	156903.00	-7411.04	9.7%
CEY	Advanced Payment Policy	5464.64	518998.94	31497.28	20.8%
	Five Benefit Policy	4417.68	194820.55	-3550.96	11.4%
UAL	Super Benefit Policy	6085.00	453169.38	32304.57	22.2%
CTC	Apeksha Policy	4955.24	349504.83	17862.41	18.5%