1. Unit linked contracts:

* They are generally endowment assurance or whole life assurance contracts.
* But you can also have unit-linked annuities.

1. There’s Unit linked contracts and unitized with profits contracts.
2. Contracts can either be unit linked or conventional.
3. Unit linked contracts have guaranteed death benefits (minimum death benefits)
4. When we model, we usually model on a year over year basis. But in the real world, we need to if data is available do this on a daily or weekly basis.
5. When building an insurance product, you need to hustle for the following data:

* Decrement rates (by death, critical illness, surrender, etc) whether at the beginning or end or mid of the year

1. We have death benefits, surrender benefits and maturity benefits
2. What does extra death benefit mean?

Remember, the formula is

where if the death benefit was S (guaranteed sum assured), the policy holder would receive S plus the extra amount S-F(t) from the unit fund. If S-F(t) is negative, there’s no extra death benefit so, instead of writing the negative we write 0. This only applies if the policy holder dies. He can also die at maturity and still receive the payment.

1. What does extra maturity benefit mean?

Remember, the formula is

Where if the maturity benefit was B, the policy holder would receive B plus the extra B-F(t). you can assume this benefit is there or not.

1. What does extra surrender benefit (cost) mean?

Remember, the formula is

If a policyholder withdrew from the policy (surrendered) before maturity and not dying, they would receive a stated surrender value. A penalty may or may not be charged. However, if we find that the SV is greater than the fund value, that difference would be the extra surrender benefit added to the surrender value. Why is it a benefit? When a claim is made, the insurance company will buy the units from the policy holder’s unit fund to get cash to pay the surrender value SV. If SV is more than the Unit Fund’s value, some money will be left over from buying back the unit fund. That money that is left over is the extra surrender value. Same concept applies to extra maturity and extra death benefit. So, you notice in the unit and non-unit tables, they don’t explicitly include the guaranteed sum assured. They don’t include it because we don’t need them to determine profit. Mayve when we want to reserve which is an entirely different thing.

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1. Note that extra benefits are different from expected expenses(costs). Expected expenses are costs associated with making the payment.
2. Risk discount rate = Risk free rate + Risk Premium

But if you’re investing in government bonds, then risk premium is zero since government bonds are considered to be risk free. By the way, risk premium = expected return – risk free rate.

Main Categories of Expenses Incurred by Life Insurance Companies

1. Initial Expense

* Underwriting (allowed for on a per policy basis although medical expenses might be sum assured related)
* Processing proposal and issuing policy (allowed for on a per policy basis)
* Commission (allowed for directly and usually premium related)
* Marketing (allowed for on a per policy basis on estimated volumes)

1. Renewal Expense

* Administration (allowed for on a per policy per annum basis with allowance
* for inflation)
* Commission (allowed for directly and usually premium related)
* Investment Expense (charged as a deduction from investment funds)

1. Claim Expense

* Calculation and payment of benefit (allowed for on a per policy per annum

basis with allowance for inflation)

1. Overhead Expense

* Central services e.g., premises, IT, legal (allowed for on a per policy per

annum basis with allowance for inflation)

1. All maturity related expenses and benefits occur at the end of the year