Managing Interest Rate Guarantees In Regular Premium Traditional Products

December 05, 2013

Guide:
Mr. Rajesh Dalmia

Presented by:
Abhinav Singh
Jenil Shah
Mehtab Khan
Varakavi Parasurambabu

20th IFS 04 - 06 December 2013

AGENDA

- Examples Of Interest Rate Guarantees
- Why And How Interest Rate Guarantees Are Provided?
- Historic Interest Rates
- Economics Of Low Interest Rates
- Why Manage Interest Rate Guarantees
- Interest Rate Guarantee Management By Regulators/Profession And Insurer
- Managing Investments For Interest Rate Guarantees
- Key Risks In Managing Interest Rate Guarantee
- Risk Management - Interest Rate Guarantee
- Usage Of Derivatives In Managing Interest Rate Guarantee
- Non Financial Levers In Managing Interest Rate Guarantees
- Optimization/ Hedging Vs Non Hedging Vs Balance Hedging
- Risk Management And Monitoring
- Recent Developments
- Future Expectations
- Summary

Examples Of Interest Rate Guarantees

- **Guaranteed annuity option** :-Maturity value can be converted into an annuity on guaranteed terms. Such guarantee are offered in Deferred annuities.

- **Guaranteed Death/Maturity/Surrender benefit** for a without-profits Endowment assurance policy.

  - Guaranteed benefit is fixed at outset
  - Or increased in predetermined way during the policy term. (either fixed or variable increases based on some external yield index subject to a floor)

- **Guaranteed Death/Maturity/Surrender benefit** for a with-profits Endowment assurance policy.

  - Guaranteed benefit set at outset
  - And is increased by the declared bonuses(guaranteed and cannot be reduced).
  - Insurers can reduce the future bonuses subject to meeting PRE in periods of low returns.

Why And How Interest Rate Guarantees Are Provided?

WHY

- In traditional products, Insurers provide guaranteed benefits in return for guaranteed premium(s)
  - to make their saving products attractive to potential policyholders; and
  - to enhance the competitiveness of their product portfolio.
- Regulatory requirements: Guaranteed minimum surrender benefit, Guaranteed minimum death benefits and/or Guaranteed minimum maturity benefits etc.

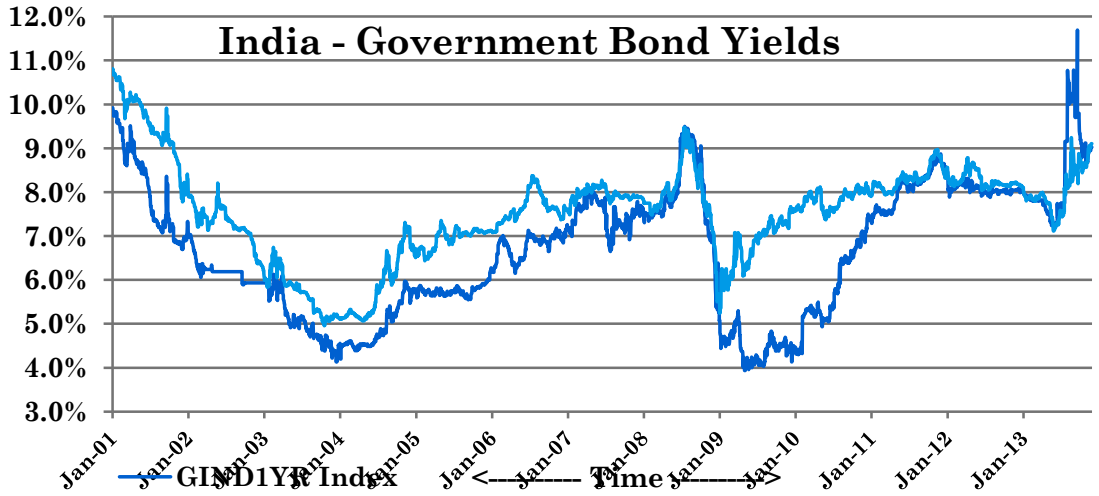
HOW

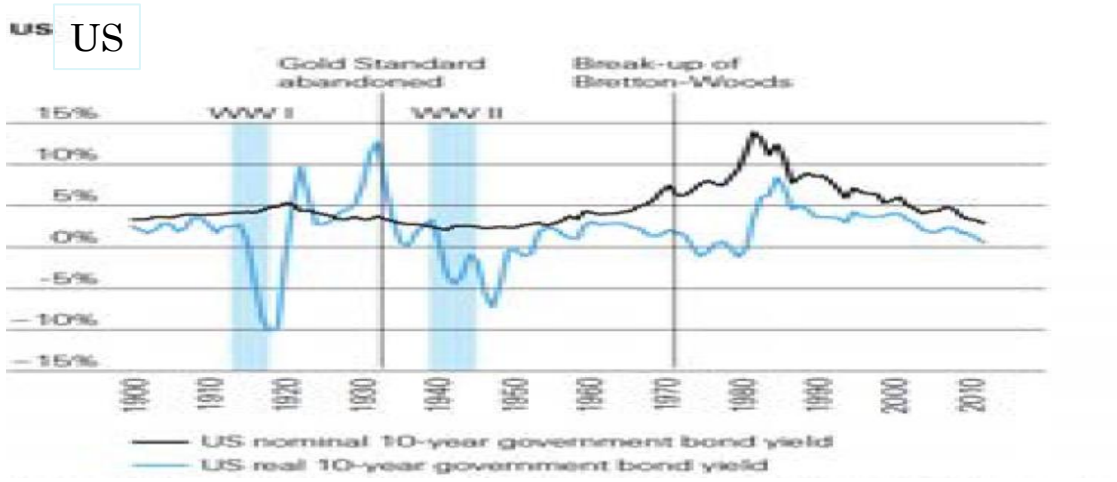
- **Implicit Interest rate guarantee:** Premiums are Guaranteed for Benefits guaranteed in nominal amounts;

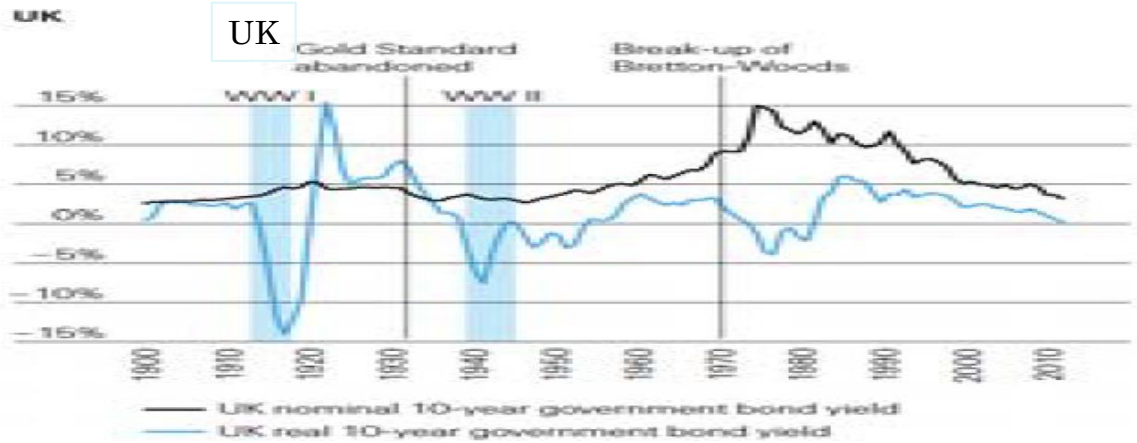
  The guaranteed interest rate is the one assumed in pricing

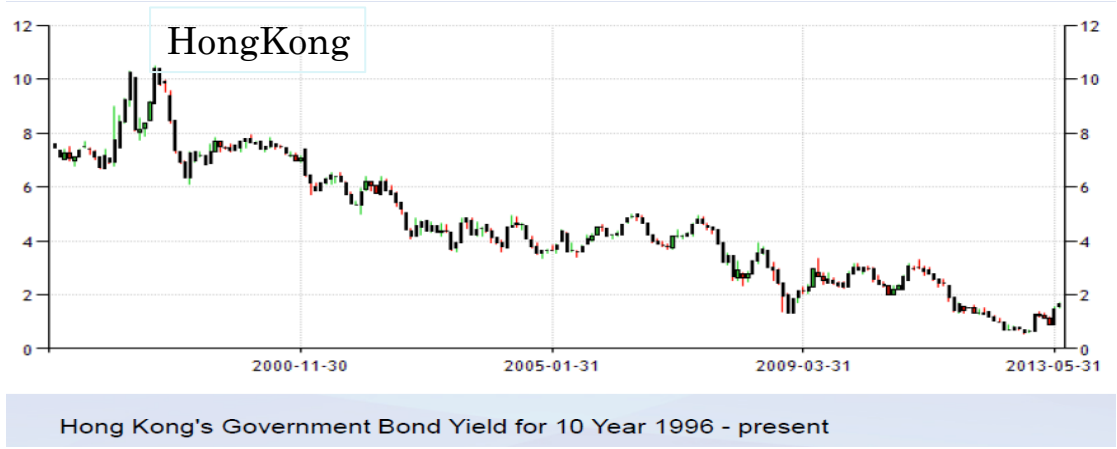
- **Explicit Interest rate guarantee:** Premiums are Guaranteed for benefits guaranteed on past/current interest rates subject to guaranteed minimum (which may be zero) .

Historical Interest Rates









- **From the above graphs, it is evident that there was high variation in interest rates and exact prediction of future rate is next to impossible.**

Economics of low Interest rates

What may keep interest rates low

– Supply and demand: an excess of savings with a lack of investment opportunities

– Quantitative easing pushing asset prices up yields down

– Weak economy needs low interest rates to spur growth

– Massive amounts of borrowing by government and consumers couldn't survive a rise in interest rates

Reasons for past high rates

– Accelerated inflation and inflationary expectations
(e.g. a substantial increase in the price of oil in turn placed large cost-push pressures on many other prices)
– Continued heavy borrowing by the government to finance operating deficits
– Tighter monetary policy

What is causing current high rates now

– Inflationary pressure
– Currency devaluation
– Decreasing confidence in government's ability to reduce/eliminate deficits, ultimately repayment of outstanding debt

Economics Of Low Interest Rates

Demand: Generally lower interest rates ---> higher prices ---> lower demand –
Example the UK annuity business - Annuity prices increases- demand decreases.
But if Guarantees are adjusted with significant time lag then demand may increase.

Balance sheet: In a perfect world with perfect Assets Liability match, the value of a company should be immune to moving interest rates. However insurers do have duration mismatches, due to the:
– lack of long-term assets to back up long-term liabilities
– different valuation of assets and liabilities, e.g. Assets at book value and liabilities on prudent basis considering future outlook.

Investment income: Falling interest rates translate into lower investment returns and therefore lower profitability

Policyholder behavior: may be sensitive to changes in interest rate and other economic developments as well as psychological factors, which can undermine the insurer's cash flow projections

Why Manage Interest Rate Guarantee

- If realized returns are lower than Interest rate guarantee :
  - On With Profit products the bonus declaration may be lower than PRE.
  - Shareholders take capital loss or inject fresh capital
  - Loss of reputation / future sales.
  - Increase in surrender/ lapses- aggravating effect.
  - There might be regulatory sanctions due to Statutory insolvency.
  - In worst scenario the Insurer may fail to provide the guaranteed benefits leading to actual Insolvency proceedings.
  - Big Insurers' failure may have repercussions in Financial market.
- Hence, it is imperative to have a robust mechanism to manage interest rate guarantees both by the **Regulators** and the **Providers.**

Impact on financial & regulatory reporting

- **Available Capital:** Volatile ; Volatility can be reduced by hedging
- **Solvency requirements:** Unhedged Interest rate Guarantees can significantly Increase solvency Capital requirements
- **Profitability:** Can be highly volatile under certain reporting methods like IFRS where assets are valued at market value

Case Studies –Interest Rate Guarantees

Equitable Life-UK

- Sold large volume of Deferred annuities high guaranteed annuity rate
- **Complacency:** assuming that Interest rate will not go down in future
- **Negligence:** No Hedging was done and worst was to not holding the reserve for the embedded guarantees
- Interest rates gradually declined in the 90's, triggering severe losses
- Policyholders lost confidence, additional severe liquidity issues due to mass lapses
- Finally put into run-off in 2001

Japanese Life Insurers

During 1970-1990

- Losses in foreign currency holdings
- Led to heavy sales of insurance products with high guarantees
- Underlying investment practice were aggressive towards risky instruments
- Shock in equity market leads to loss of credibility triggered a spike in surrenders

Regulatory action

– strengthening accounting rules and assessing policy risk

– lowering guarantee levels

Executive life - US

Prior to 1980

– Insurers were allowed to give guarantees if their investment allows

-But there were inefficiencies with respect to investment guidelines

-Executive life gave high guarantees backed by portfolio of junk bonds

-In Short term they have better return than competitors hence higher sales

-But losses in later years leads to demise of the company

Interest Rate Guarantee Management By IRDA

IRDA Investments Regulations:

- IRDA has put a well conceived regulatory framework for overall investment management.
- As per IRDA Investment Regulation, there are separate norms for life insurance controlled fund, assets relating to pension business, annuity business and linked life insurance.
- Limits the exposure under different asset class and different sectors; Thus reduces investment freedom

ALM Circular

- IRDA issued a circular on Asset Liability Management and Stress Testing.
- Requires the distribution of assets vs. liabilities in to duration buckets discounted at base rate and also +/- 1% and +/- 2%.
- Requires impact on duration due to changes (for runoff as well as for three years) under various scenarios

Stress testing: for the following scenarios

- Changes in yield curve: parallel shifts, no-change (parallel-shift) for duration less than five years with parallel-shift (no-change) for duration more than five years, and change in credit spreads
- 10% annual adverse deviation in mortality /morbidity/ expenses/ withdrawals/l apses and +/- 25% in new business volumes.
- Others like reinsurance ceded, reserving basis, equity shocks etc.

Interest Rate Guarantee Management By Profession

Institute of Actuaries of India issues GNs and APSs to ensure that its members carry out their professional work in a manner that will enhance the reputation of the profession and also increase appreciation by the public of both the quality and utility of the profession's work.

APS1 - Appointed Actuary and Life Insurance Business

5.5 (ii,iii and vi) Requires Appointed actuary to consider financial condition of the company with reference to embedded options and guarantees ,use of derivatives, free assets and valuation method for options and guarantees.

8.3. Valuation methods should be…. to any guarantees on surrender, paid-up values etc. and any options.

APS2-Additional Guidance for Appointed Actuary and Actuaries involved in Life Insurance

2.4 setting MAD: "In terms of sub-clause 2… appropriate margins in the valuation basis or an additional reserve. "

2.5 PRE ….changed investment conditions envisaged in 2.4 adequately covers latest view of policyholders' reasonable expectations."

5.2 "Provision shall be made for **investment guarantees,** on prudent assumptions and taking into account the changes in circumstances envisaged in section 2.4. "

Interest Rate Guarantee Management By Profession

APS3:Financial Condition Report

2.3.4 The FCR should indicate "Any use made by the life office of derivatives, its purpose and its financial significance. "

3 The Appointed Actuary …

(i) Concentration of assets in particular risk areas; (ii) Derivatives; (iii) Assets containing unusual provisions which may be susceptible to particular risks; (viii) The impact of options and guarantees in the insurance liabilities in different scenarios.

APS5- Appointed Actuary and Principles of Life Insurance Policy illustrations 1(Excerpt from SCSP)

" Some benefits are guaranteed ….should be marked "guaranteed" in the illustration table on this page. "

"Indicated within the illustration… may indicate whether or not guaranteed"

8. Guaranteed benefits

"Guaranteed benefits should be clearly distinguished …non- guaranteed benefits (in the form of bonuses)."

10. Lapses, Surrenders and non- forfeiture provisions

b) The SCSP provides that …..clearly distinguish between guaranteed and non- guaranteed surrender values…. available non guaranteed surrender values thereafter.

Interest Rate Guarantee Management By Profession

APS7:Appointed Actuary and principles for determining Margins for Adverse Deviation in Life Insurance Liabilities

4.3 In constructing the adverse scenarios, the Actuary must:

(i) identify and give particular… threat to the security of policyholder interests;

(ii) identify and consider …falling or rising interest rates … substantially matched or mitigated;

(iii) consider more generally the interaction of liabilities and assets;

(iv) consider all options, with a view to policyholders acting rationally to maximize their own interests,….

5.2 While assessing the risks inherent in guarantees provided …. invested and investment income reinvested, …consideration of both deflationary and inflationary scenarios.

6.2 …consider all implicit and explicit investment guarantees provided, and the MADs should appropriately allow for the risk of such guarantees biting under adverse scenarios.

APS10:Determination of the Embedded Value (EV) of life insurance companies incorporated in India and Regulated by IRDA for the purpose of Initial Public Offering

5.9 The IEV should reflect the risks in the covered business. ….explicit allowances for financial options and guarantees, 6.1 The VIF will also consist of : The time value of financial options and guarantees…

6.2 The PVFP should reflect the intrinsic value of financial options and Guarantees

6.29 Where cash flows contain financial options and guarantees such that they do not move linearly with market movements…

Interest Rate Guarantee management by Profession

APS 22- Reserving for Guarantees in Life Assurance Business

4. This guidance note recommends the use of stochastic models ….possible shortfalls in respect of guarantees. The Actuary may however make use of alternative methods, including deterministic methods, to quantify this liability, …. application of stochastic methods is unlikely to have caused material increase in total actuarial liability for the life assurance business.

- Purpose is to ensure that the mathematical reserves are adequate to meet the minimum guaranteed benefits arising due to the contractual agreement.
- Recommends the minimum steps that should be taken by the Actuary
- Recommends the use of stochastic models where appropriate to quantify reserves required to finance possible shortfalls in respect of guarantees. May use alternative methods, including deterministic methods, to quantify the liability, provided such models or methods are based on sound actuarial principles .
- Describes various methods like Stochastic asset / liability models; Deterministic models and Impact of prevailing market conditions. Appendix describes calculation of reserves by Market consistent valuation and to deal with Extreme observations.
- This guidance applies to linked business with guarantees, to variable insurance products, to participating business and to any other line of business with embedded derivatives

Interest Rate Guarantee Management By Profession

GN6-Management of participating life insurance business with reference to distribution of surplus

Calculation of asset shares

An asset share ...accumulation of the premiums received plus investment… **a reasonable cost of capital and of guarantees, contribution** from miscellaneous surplus (if considered appropriate) and transfers to shareholders.

The Appointed Actuary may adopt … allowing for **the cost of guarantees in the derivation of the asset share.** The allowance for the cost of guarantees arises …… types of investment held.

The AA should consider the likely investment management …… policyholders‟ reasonable expectations (PRE) are being appropriately set through sales literature and illustrations.

Interest Rate Guarantee management by Providers

Managing at product design stage

The management of interest rate guarantees is a key element of financial management of Insurers. All guarantees have a cost and that cost must be identified and allowed:

New product features should be designed to effectively manage financial, life and policyholder behavior risk.

Balance between policyholder options and insurers hedgeability should be given

Among savings products, there are a variety of design features than can reduce sensitivity to changes in interest rates:

– **level of guarantee:** the lower, the less likely market will breach

– **flexibility of guarantee:** flexible upwards and downward

– **duration of guarantee:** annual vs. lifetime guarantee

– surrender features

– **right to increase** payments/sum insured

- The product development & pricing should allow for return on asset mix to support this product (or sub-fund level strategy)
- Product mix and future sales should ensure synergies between products e.g. Annuities & Endowment where current regular premium will match Annuity payouts over future years and Price of Annuity matches with maturity of Endowments issued in past.
- The premiums should be reflective of change in economic conditions at point of sale; this does not imply repricing but the parameterization of premiums to allow for changing economic conditions.
- Regular ongoing valuations (reserving), in order to maintain Insurers' financial position in the future.

Managing Investments to meet Guarantees

- **What assets to invest when we have surplus?**
  - Bonds: Government bonds, Corporate bonds & Index linked bonds
  - Equity, Property and Investment Funds
  - Cash & other money market instruments
  - Derivatives can be used to hedge interest rate risks
- **How to meet any deficit?**

  Sale of existing assets or by borrowing.
- **Follow the internally set investment mandate.**

  Need to move toward this if the existing portfolio is far away from the mandate.

  Strategic asset allocation

  Target asset allocation

  Optimization & rebalancing
- **Compliance with Regulatory restriction on what to invest in.**

Managing Investments to meet Guarantees

Goals

Capital Preservation
- Minimize risk of real loss

Capital Appreciation
- Growth of the portfolio in real terms to meet future needs (liabilities)

Current Income
- Focus on generating income rather than capital gains

Total Return
- Increase portfolio value by capital gains and by reinvesting current income
- Maintain moderate risk exposure
- Generate surplus

Constraints

- Investment Policy
- Fiduciary Responsibility
- Regulatory
- Economic
- Liquidity Needs
- Geopolitical
- Total Return
- Time Horizon
- Tax Concerns

Key Risks- Interest Rate Guarantees

Asset side risks are:

- ***Interest rate risk***: Exposure to loss in value of assets from fluctuating (increasing) interest rates.
- ***Reinvestment risk***: Investing future positive cash flows - premiums net of outgoes and income (coupons) or maturities from existing assets (bonds) - at unknown (lower) yields.

  Above two risks can broadly be mitigated by duration matching with a tolerance of +/- 1 year.
- ***Liquidity risk***: Exposure to loss in the event that sufficient liquid assets will be unavailable, or will be available only at excessive cost, to meet the cash flow requirements when they are due, for example at surrender.

  The liquidity risk is reduced by having some MVA on withdrawals and having cash inflows and outflows matched for the projected rolling 12-months at best estimated payment dates.
- ***Credit risk***: Exposure to loss resulting from default by or change in the credit quality of issuers of securities and counterparties. Credit risk can be mitigated by investing in high rated securities and set limits on the exposure to any given counterparty. If possible can take some margins from counterparty as collateral.
- ***Currency risk***: Exposure to loss resulting from movements in exchange rates to the extent of mismatch between assets and liabilities. Match liabilities by currency to avoid currency risk.

KEY RISKS- INTEREST RATE GUARANTEES

Liability side risks are:

- ***Mortality / Longevity***– risk arising from the uncertainty around the time of death in situations where dying sooner / later than expected leads to reduced profitability.

  These risks can be transferred to reinsurers to a large extent. Placing requisite underwriting system will reduce mortality risks (in initial years).

- ***Policyholder Behaviour*** - is an insurance risk which includes all assumptions that describe how policyholders utilize their options.

- ***Operational Risk***: loss resulting from inadequate or failed internal processes, people, or systems or from external events.

  Risk mitigation by establishing operating guidelines / Documentation of roles and responsibilities.

- ***Secondary Risks***: arising from all the risk mitigation measures to address risks mentioned earlier. Secondary risks need to be considered while choosing from alternative mitigation measures. For example, interest rate risk reduced by using swaps credit risk from counterparty.

Risk Management -Interest Rate Guarantee

Measuring the cost of guarantee

- Model office projections include - Asset cash flows: Coupon payment from bonds; Maturity value from bonds; Dividend payment / sale from stocks. Liability cash flows: Premium income; Expense/ commission out; Benefits outgo. Other cash flows: taxes; Capital flows

- Use judgment in the choice of model, assumptions and parameters based on the purpose for which the below methods are used. For example, to demonstrate statutory solvency use best estimate assumptions with MAD.

  - **Deterministic Analysis** - Explicitly chosen or prescribed supplemented with Sensitivity testing
  - **Stress Analysis**– Select & Quantify individual parameter stresses
  - **Scenario Analysis** – Select specific scenarios which in combination creates plausible scenarios
  - **Stochastic Analysis**– Select Random process to 'generate' asset and liability cashflows

Risk Management -Interest Rate Guarantee

Stress Testing and Scenario Analysis

- Measure impact of stresses on earnings, solvency, reserves, embedded value and VNB margins and Capital projections in tail risk scenarios.
- The stress testing comprises three main components –
  - Preparing base case
  - Parameterisation of stress events
  - Applying the various stresses and measuring aggregate impact
- Identify key sources of risk and understand sensitivity to each of them.
  - By analysis using historically observed macro-economic scenarios.
  - By examining historical volatilities and applying statistical assumptions, the parameters are assigned numerical values.

Interest Rate Guarantee management by Providers

Stochastic analysis

Steps involved are as follows

- Generate stochastic scenarios for future interest rates and equity returns.
- Apply variance reduction techniques to optimally select the representative scenarios.
- Perform policy grouping exercise to reduce the run time, caution is required here to ensure that the grouped portfolio broadly behave similar to original portfolio.
- Project policy cash flows for each scenario based on demographic and economic assumptions , and also policyholder behaviour. Shortfall would include cash flows associated with investment guarantee if the guarantee is in the money.
- Determine the cost for each scenario by discounting the shortfall at scenario specific interest rate (short rate).
- Determine the cost of guarantee using an appropriate Conditional Tail Expectation (CTE) level. CTE reflects the information beyond the point of taking expectation unlike percentile which reflects the information at the percentile point.

Risk Management -Interest Rate Guarantee

ALM TECHNIQUES: BACKGROUND

- In a regular premium traditional product, premiums will be invested primarily in fixed income securities. Therefore, **reinvestment risk** and **interest rate risk** are expected to be the key risks.
- In India, there are very few 20-30 year long term bonds and ZCBs. And,10-year coupon bearing bonds are traded in large volumes. However, projected liability cash flows of a typical 20-35 year regular premium traditional policy suggests that without very long-term assets the portfolio is exposed to a significant reinvestment risk in prolonged low interest rate environments.
- Suitable investment strategy is needed so that even during a prolonged low interest rate environment the Insurer meets the large benefit payouts comfortably. Any strategy must meet three criteria:
  - The portfolio yield is not lower than the long run average yields, based on which the benefits will be set (***maximise returns***)
  - Maturity profile of a significant proportion of assets is aligned with the times when the large benefit payouts are expected (***minimise risks***)
  - Liquidity profile is aligned with the variability in benefit payouts

Risk Management -Interest Rate Guarantee

ALM TECHNIQUES

For Endowment products with guaranteed maturity benefit, different strategies can be used to reduce the risk of not meeting the guarantee.

- ***Duration matching strategy*** provides protection against interest rate risk and reinvestment risk. By duration matching these risks get offset, since these two risks act in an opposite direction for a given change in yields.
- Exact duration matching involves costly affair of frequent rebalancing. Hence, broadly match durations with target duration gap of ± 1 year.
- Any net cash flow – New business / renewal premiums or income / maturities from existing assets – is reinvested in such a way that Duration gap is minimized. This way rebalancing costs are minimized.
- Convexity of assets should be higher than that of liabilities which give small second order profits

Risk Management -Interest Rate Guarantee

ALM TECHNIQUES

- ***Cash flow matching strategy*** aims to match all the liability cash flows exactly by the asset proceeds – incomes & maturities. Removes all the market risks but difficult to implement due to lack of bonds of enough long terms and ZCBs.

- ***Maturity matching strategy:*** Aims to match the benefit payout at maturity to maturity dates of bonds. If bonds of enough long term maturity are available, then interest rate risk can be reduced by ***maturity matching strategy***. Premiums from initial years should be invested in bonds whose maturity is close to policies' maturity benefit pay dates. All the incomes from bond portfolio and future net liability cash flows should be reinvested into the same or similar bonds whose maturity matches closely with the liability maturities.
- Under ***maturity matching strategy,*** reinvestment risk is still present that affects overall earned rates. investment of asset proceeds and the future net liability cash flows in a falling interest rate scenario poses a significant reinvestment risk .

Risk Management -Interest Rate Guarantee

ALM TECHNIQUES:

INSTRUMENT MARKET EXIST/ REGULATION ALLOWS

- In India, there are very few 20-30 year long term bonds and ZCBs. 10-year coupon bearing bonds are traded in large volumes. However, projected liability cash flows of a typical 20-35 year regular premium traditional policy suggests that without very long-term assets the portfolio is exposed to a significant reinvestment risk in prolonged low interest rate environments.
- For short to medium term Maturity one can invest to Corporate bonds/ Fixed deposit with banks
- Most bonds are hold till maturity and traded when anomaly in prices exist with respect to similar bond
- Very Limited instruments available for long term.
- Expect RBI to issue more long term bonds
- Investing in high rated corporate bonds, the low default risk can be diversified. And ***holding till maturity,*** extra returns could be earned over G-secs as marketability premium. However this may introduce credit risk which can either be mitigated/retained by company as per the position of free surplus

Usage Of Derivatives In Managing Interest Rate Guarantee

Derivatives	Usage	Impact on Insurer	Regulator/Market
Market exist/ Regulations does not Allows			
Interest rate swaps, Forward Rate Agreements, Interest rate futures	To limit the potential financial losses from significant reductions in asset earned rates relative to contract guarantees	▪The balance sheet and solvency position may look stronger but may reduces future profits. ▪Imperfect hedge due to basis risk(underlying nature of asset and liability cashflow are different). ▪The cost of purchasing options or the expected loss of profit by entering such deals effectively results in risk free returns only albeit in efficient market ▪They also render the balance sheet and P&L to be volatile if bonds are valued at book value and derivatives at market value. ▪Incidence of tax rates may change because all gains/ losses are realized only.	▪Standard contracts exits for Interest rate futures ▪OTC market exist for forward rate agreements and interest rate swaps, but not very deep ▪Since regulator does not allow them for hedging, the market has not evolved

Usage Of Derivatives In Managing Interest Rate Guarantee

Derivatives	Usage	Impact on Insurer	Regulator/Market
Market exist/ Regulations does not Allow			
Swaptions, floors/collars, spread lock on interest rates and put & call options on bonds	To limit the potential financial losses from significant reductions in asset earned rates relative to contract guarantees	▪The balance sheet and solvency position may look stronger but may reduces future profits. ▪Imperfect hedge due to basis risk(underlying nature of asset and liability cashflow are different). ▪The cost of purchasing options or the expected loss of profit by entering such deals effectively results in risk free returns only albeit in efficient market ▪They also render the balance sheet and P&L to be volatile if bonds are valued at book value and derivatives at market value. ▪Incidence of tax rates may change because all gains/ losses are realized only.	▪- The market does not exist in India and yet to evolve. ▪ Regulator do not allow investing in these derivatives. ▪ Some of the instruments are not available at all, others are available in international market but market is not deep enough ▪ In other countries where the market exist and Insurers are allowed to use them, they heavily used for ALM
Credit default swaps and credit spread options and other credit derivatives	To limit losses on corporate bond defaults. The corporate bonds might be purchased to increase the returns)		

Non Financial Levers To Manage Guarantees

Expenses

- Declining investment income creates a strain on profitability and focus moves on to cost management, with significant cuts.
- Actively manage expenses in response to low interest rates and seek to adjust unit costs in reserving assumption
- Focused on cost reduction, efficiency improvements
- IT and shared services a focus for many
- Lowered commissions on multiple products
- Staff reduction:

Expense management important regardless of interest rate levels; but is critical in low interest rate regime

Policyholder Behaviour - is an insurance risk which includes all assumptions that describe how policyholders utilize their options.

– Policyholders may not react completely rationally to moves in interest rates

• they are not aware of the economic value of their options

• are not aware that they could exercise them, or simply because of inertia

– Policyholder behavior may be driven by factors other than interest rates, e.g. developments in housing markets, concerns about insurers solvency, or liquidity needs of policyholder are important drivers of the behavior

– Incomplete information may mislead insurers about policy behavior.

Optimization/ Hedging vs Non Hedging vs Balance Hedging

- Perfect hedging is impossible or very expensive
- For a long-term business we must optimize the need for higher expected return and risk particularly the quantum of short term risk retained.
- Financial Theory dictates that in efficient & Arbitrage free market risk adjusted returns should be equal to risk free rates : There is not much benefit in terms of returns by investing in these instruments but for one can still use them for diversification.
- The hedging should be dynamic to take care of changing regulatory and economic conditions.

- Cost of purchase (impact on current P&L): ***immediate***
- Influence on future profits (impact on available capital/MCEV): ***longer***
- Ability to hedge against extreme events (impact on target capital): ***much longer***

- Also cost- benefit of hedging:
  - Hedging 100% and not a hedging at all
  - Or an optimum balance ; deliberate mismatching
  - Depending on risk appetite of the provider which in turn depends on available capital,

Risk management and Monitoring

- **Determine regularly status of the guarantees:** in-the-money /out-of-the-money
- **Set tolerance limits for:**
  - **Liquidity scores:** Scoring system based on Rating /term /type /sector/average traded volume
  - **Credit Scores:** Scoring system based Rating /term /type /sector/Cover ratios
  - **Concentration:** Sector / issuer
  - **Proportion of guaranteed products in overall portfolio**
  - **Limits :** Cash/ gain & loss/ Turnover
- **Management actions :**
  - If limits are breached, take corrective actions where possible
  - Otherwise, set aside separate additional reserves or increase interest rate MAD
  - Emphasize on more detailed and frequent MIS on status of guarantees
  - Revise the investment strategy if required

RECENT DEVELOPMENTS- SOLVENCY II

The European Insurance and Occupational Pensions Authority ("EIOPA") on the long-term guarantees assessment ("LTGA").

1. the adoption of the "classic" matching adjustment for qualifying life insurance business backed by cash-flow matched assets of a specified credit quality;
2. the adoption of a "volatility balancer" for non-qualifying insurance business, in place of the counter-cyclical premium ("CCP");
3. extrapolation of the risk free rate term structure for Euros over a longer convergence period (40 years has been suggested);
4. an increase in the maximum period over which a solvency capital requirement ("SCR") recovery period may be extended in the case of long-term insurers, and a broadening of the circumstances in which such extensions may be granted; and
5. the separation of transitional relief (together with the volatility balancer) into a new off-balance sheet own fund item, rather than incorporating these adjustments into the technical provisions and thereby affecting the SCR calculation.

Future Expectations

- We may see convergence of reporting framework across the world and i.e. moving to market value approach for reporting; will lead to volatile balance sheet and P&L
- Derivative markets will be developed and same will be allowed for usage by Insurers; albeit with suitable risk management framework
- Insurers moving to economic capital approach and hence integrating all risk management processes.
- Usage of advanced techniques which in the past were ignored either due to computing power or being too complex
- Products with value for costumer being developed
- Reduction in cross subsidy across products and policies

SUMMARY

- Regulatory measures to be valued and complied
- Look for insights from the reports / results / submissions
- Follow all the relevant GNs and APS from the profession
- Select suitable ALM technique according to the nature of the interest rate guarantee
- Improve the investment strategy regularly for the performance/ deviations.