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Case Study 5: Non Participating products with high interest rate guarantees

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Case Study

- You join as a Chief Actuary of a new small life insurance company that has started operating 5 years ago. The company offers a wide range of products catering to all customer needs and profiles. Recently the competitors have launched new range of non-participating products offering interest rate guarantees in range of 4% to 5% p.a.
- The marketing head and the CEO want you to design a competitive long -term product with minimum interest rate guarantees of 5.5%p.a. As an actuary you are worried about the future earning on the investments along with the reserving for this product which can cause substantial strain on the capital requirements. The CRO of the company also agrees to your views and asks you to be careful. You speak to the investment officer and CFO who are sure of making returns of at least 8% to 9% on investments for next few years. This is largely due to the locked in investment at higher returns backed by a derivative strategy that offers to hedge the portfolio. The company has an evolved investment department.

- State the dilemmas and constraints you face as a professional in pricing this product?
- What are the professional guidelines/ regulations you need to consider before pricing and reserving the products?
- What are the professional issues (like ethics, conduct, communication, conflict of interest etc.) which you may face in managing the product?
- What would you do in this situation, would you price the product with this level of guarantees? How will you justify your stand to different stakeholders?

Agenda

- Dilemma's and constraints in pricing
- Regulations / Professional guidelines – Pricing and Reserving
- Professional issues – Ethics, communication,
- Pricing Decision and Stakeholder implications
- Conclusion

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Dilemma’s and Constraints in pricing (1)

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✓Product design

- Product design complexity, example, cooling off period
- Level of guarantees
- What terms do we offer?
- For eg: Regular premium product with 10 year / 15 year premium paying term, limited premium product, Single premium product
- Setting prudent assumptions with appropriate margin for adverse deviation depending on confidence on the parameter.
- Identify situations which could lead to financial difficulty and include recommendations as to what might be done to avoid such circumstances.
- Regulatory Constraints

✓Profitability

- Striking balance between the risk and return to achieve 5.5% minimum guarantee
- Competitive Premium rates and New Business Profit margins
- High capital requirements – Assess using stochastic /deterministic techniques.
- Low / High Business Volumes
- Impact on existing business
- Competitive pressures – Other insurers may provide competitive premium rates / guarantees higher than 5.5%

Dilemma's and Constraints in pricing (2)

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✓Investment return and guarantees

- Interest rate risk - Uncertainty about future interest rates
- Reinvestment risk – product may be offered with limited premium paying term.
- Non availability of suitable term investments to back the guaranteed liabilities
- Cost of interest rate hedging vs returns
- Risk of asset liability mismatch
- Non availability of partly paid up bonds of specific duration to hedge interest rate risk
- Counterparty risk –Companies/ Banks offering 8%-9% guarantees for few years.

✓Assumptions and Modelling

- Estimation of assumptions due to limited data
- Estimation of guarantee reserves
- Choice of model for economic generators for interest rates.
- Model assumptions for lapse rates, expenses, interest rates, inflation etc & interaction between the variables
- Risk on how experience will unfold in future

Dilemma's and Constraints in pricing (3)

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✓Other constraints

- Choice of distribution channels
- Significant training required for sales channel
- Set up of policy management systems
- Recouping initial expenses – distribution set up costs, marketing costs etc
- Sharing the risk between insurer and reinsurer
- Availability of suitable reinsurer
- Existing policyholders reasonable expectations -Reputation risk

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IRDAI Regulations and Guidelines (1)

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- IRDAI (Appointed Actuary) Regulations, 2017
- IRDAI (Non-Linked Insurance Products Regulations), 2019
- IRDAI (Assets, Liabilities, and Solvency Margin of Life Insurance Business) Regulations, 2016
- IRDAI (Actuarial Report and Abstract for Life Insurance Business) Regulations, 2016
- Guidance Note (GN) 22: Reserving for Guarantees in Life Assurance Business
- IRDAI Circular on Asset Liability Management and Stress Testing, 2012
- IRDAI (Investment) Regulations, 2016 and IRDAI Guidelines on Interest Rate Derivatives, 2014

IRDAI Regulations and Guidelines (2)

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IRDAI (Appointed Actuary) Regulations, 2017

- **Powers conferred to the Appointed Actuary:**
  - ✓ Access to all information or documents in possession of the insurer
  - ✓ Freedom to speak or discuss on matters relating to actuarial advice
- **Duties and obligations**
  - ✓ Ensuring the solvency of the insurer at all times
  - ✓ Care and attention towards matters that may affect policyholder interests
  - ✓ Pay due regard to regulations set forth by the regulator and generally accepted actuarial principles and practice

IRDAI (Non-Linked Insurance Products Regulations), 2019

- Sections address guidelines to be followed for product structure, benefits payable, expenses, commissions, remuneration, surrender values, miscellaneous provisions and market value adjustments

- **References of other IRDAI regulations and guidelines:**
- Insurance Act, 1938
- IRDAI (Actuarial Report and Abstract for Life Insurance Business) Regulations, 2016
- Commission and Remuneration Regulations
- Expenses of Management of Insurers transacting Life Insurance Business Regulations

IRDAI Regulations and Guidelines (3)

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IRDAI (Assets, Liabilities, and Solvency Margin of Life Insurance Business) Regulations, 2016

Assets	Liabilities	Solvency Margin
➢ Admissible assets ➢ Statement of assets in ARA	➢ Determining mathematical reserves ➢ Policy cashflows that need to be considered ➢ Valuation parameters ➢ Valuation of options and guarantees ➢ Additional provisions ➢ Statement of liabilities in ARA	➢ Minimum solvency requirements ➢ Determination of Required SM, Available SM and solvency ratio as per ARA regulations

IRDAI Regulations and Guidelines (4)

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IRDAI (Actuarial Report and Abstract for Life Insurance Business) Regulations, 2016

- Comment on consistency, completeness and accuracy of valuation data
- Valuation methodology
- Valuation bases
- Other adjustments to provisions
- Statement of assets and liabilities
- Statement of Available Solvency Margin and Solvency Ratio

IRDAI Regulations and Guidelines (5)

Actuarial Practice Standards

- APS 1: Appointed Actuary and Life Insurance Business
- APS 2: Additional Guidance for Appointed Actuaries and other Actuaries involved in Life insurance business
- APS 3: Financial Condition report
- APS 5: Appointed Actuary and Principles of Life Insurance Policy Illustrations
- APS 7: Appointed Actuary (AA) and Principles for determining Margins for Adverse Deviation (MAD) in Life Insurance liabilities

Guidance Note (GN) 22: Reserving for Guarantees in Life Assurance Business

- Use of stochastic models for quantification of reserves
- Alternatively, deterministic models or closed form models can be used

IRDAI Regulations and Guidelines (6)

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IRDAI (Investment) Regulations, 2016
IRDAI Guidelines on Interest Rate Derivatives, 2014

- IRDAI permits life insurers to deal in INR denominated Forward Rate Agreements (FRA), Interest Rate Swaps (IRS) and Exchange Traded Interest Rate Futures (IRF)
- Derivatives can be used to hedge risk of low investment returns, reinvestment risk on existing business but not future new business
- Mandatory Board approved risk management strategy
- Accounting policy for derivatives must be setup to ensure required disclosures are made within the financial statements

IRDAI Circular on Asset Liability Management and Stress Testing, 2012

- Board approved ALM strategy should be submitted to IRDAI
- ALM exercise should examine all risks impacting economic value
- Regularly monitor and manage their asset liability positions
- Stress tests to manage potential level of vulnerability to various scenarios
- Quarterly and Yearly submissions to IRDAI containing details of impact on economic value and duration of assets and liabilities

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Professional issues (1)

Dimensions of Professional Issues and Challenges

Ethics

Maintaining strong ethical principles to ensure the following:

- Protection of public interest
- Policyholder's reasonable expectations
- Solvency requirements

Conduct

Ensuring highest standards of professional conduct:

- Highest standards of professional advice
- Care and respect for different opinions and views

Communication

Excellent communication skills required to justify pricing decision for various stakeholders :

- Policyholders
- Senior management
- Regulator

Conflict of Interest

Dealing and managing conflict of interest between the following stakeholders:

- CEO and CRO
- Marketing head and CRO
- CIO / CFO and CRO

Professional issues (2)

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Dimensions of Professional Issues and Challenges

Ethics

- Ensure protection of public interest by exercising sound judgement
- Prudent assumptions for regulatory and economic solvency ratio computation
- Appropriate product design to meet policyholder's reasonable expectations on an on-going basis

Conduct

- Ensure highest level of professional advice given to different stakeholders across the organization without bias and partiality
- Demonstrate care and respect for opinions provided by other professionals and provide reasonable criticism backed by strong rationale

Professional issues (3)

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Dimensions of Professional Issues and Challenges

Communication

- Easy to understand and transparent disclosures covering product design including cashflow illustrations for potential policyholders
- Simplification of analysis performed to justify decision pertaining to product pricing for senior management and regulators

Conflict of Interest

- Conflict of interest between Marketing head, CEO and CRO – Market penetration and growth in business volumes vs capital strain and solvency requirements
- Conflict of interest between CFO and CRO – Optimistic market performance view vs prudent perspective

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Pricing decision

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Options to Consider for pricing decision

- **Option 1** → Regular payment long term product
- **Option 2** → Product with limited premiums
- **Option 3** → Product with a single premium
- **Option 4** → Do not price product

Factors to Consider for pricing decision

- Interest rate trends
- Competitor's products
- Availability of hedging instruments
- CFO's view on long term returns
- Level of free capital
- Cost of hedging
- Future expenses and volumes
- Capital raising plans
- Company's risk appetite and objective

Current market scenario

FIGURE 1: PERCENTAGE OF NEW BUSINESS APE FROM TRADITIONAL NON-PARTICIPATING SAVINGS PRODUCTS IN FY18-19

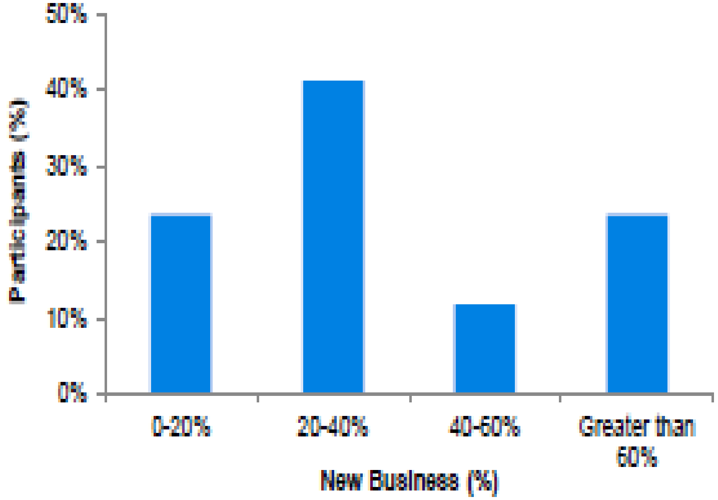
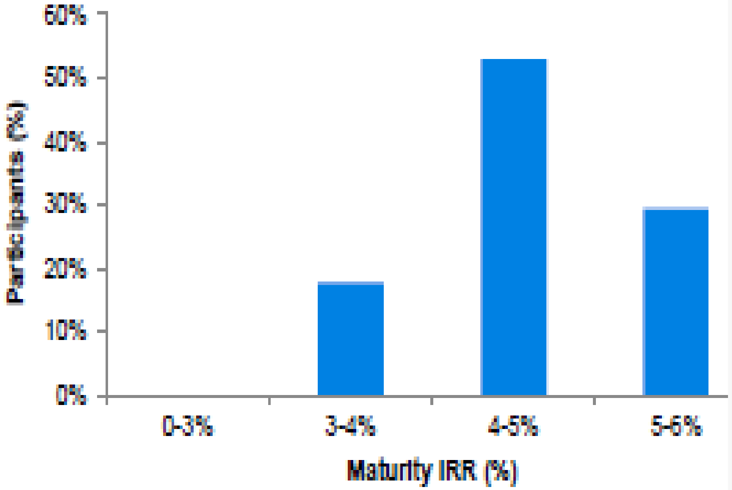
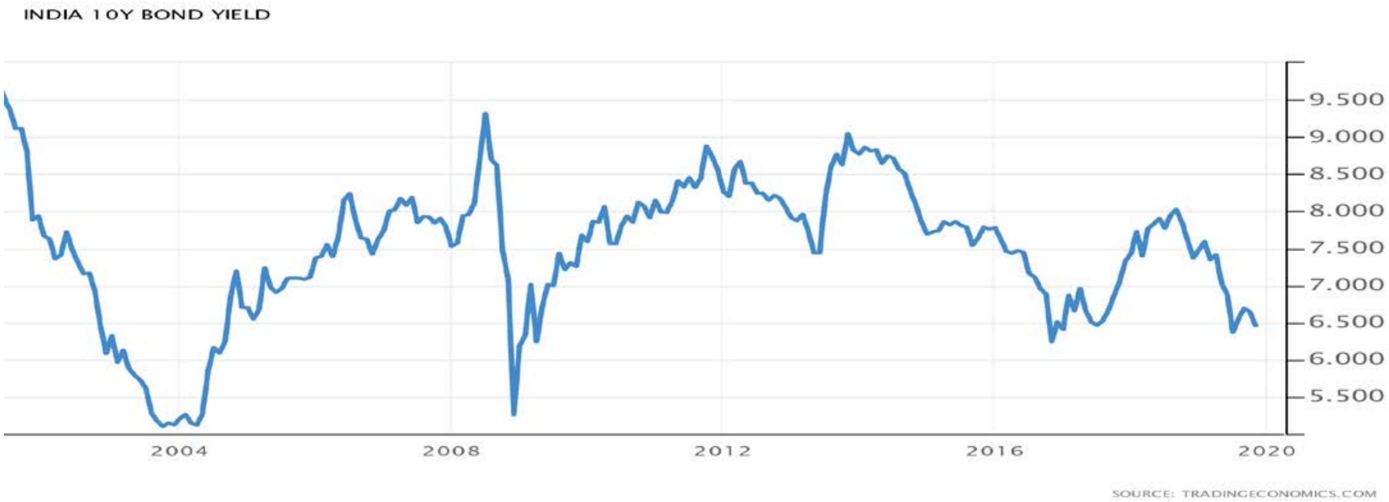


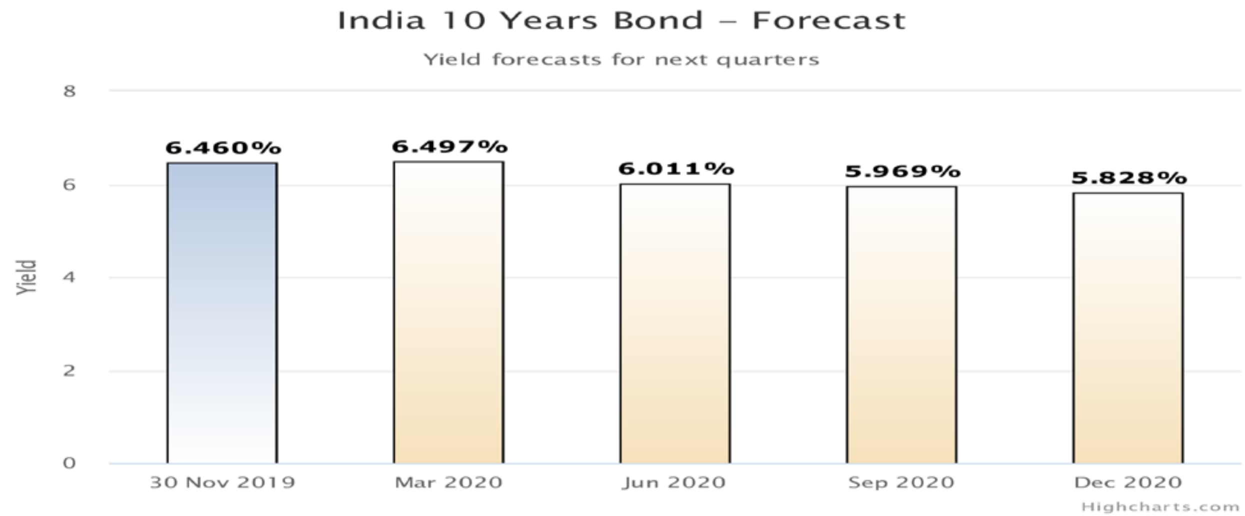
FIGURE 2: MATURITY IRR OFFERED ON TRADITIONAL NON-PARTICIPATING SAVINGS PRODUCTS



Source: Milliman Asia e-Alert

Historical interest rates and forecast





Compare options by performing analysis

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Project investment returns	▪ Use stochastic models to project the return on assets. Also consider locked in return and calculate embedded yield of the portfolio
Hedging instrument	▪ Availability and duration of hedging instruments like FRAs, partially paid bonds and IRFs
ALM Modelling	▪ Use ALM to find out the most appropriate investment strategy to get the maximum return for the defined level of risks
ESG and Cost of guarantees	▪ Allow for various economic scenarios like negative interest rates and hyperinflation. Especially where interest rates fall and lapses reduce
Cost Saving	▪ How much per policy cost can be reduced by increasing the volumes
Price sensitivity analysis	▪ Check if lapses on old policies have increased since the competitor has launched high guarantee products

Pricing decision

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Price the product with single or limited premium payments

Options	Decision	Reasons
Regular premium	×	Too risky as interest rates are expected to fall and hedging instruments aren't available
Limited premium	✓	Can be hedged and allows for more business
Single premium	✓	Can be hedged and allows for more business
Do not price	×	Will loose sales as competitors are providing products with higher guarantees

Risk Management

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Set repricing trigger which can be based on

- Change in interest rate
- Change in price of bonds
- Change in price or availability of hedging instruments
- Competitor's repricing
- Hitting a certain volume of business
- Level of available capital

Minimize risk by

- Lowering distributor's commission
- Lowering expenses through synergies
- Hedging the liabilities

Prepare for unforeseen scenarios

- Equity capital issue
- Subordinated debt issue
- Revolving lines of credit
- Financial reinsurance

Justification to stakeholders

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Shareholders

- Increased market share, maybe a need to raise further capital in certain circumstances

Regulators

- Matched assets, continuous risk monitoring, hedging the investments, price controls, locked in returns

Senior management

- Better matching of assets and liabilities and lower other costs will increase the capital buffer, continuous monitoring to ensure that we are solvent, hedging of investments

Distributors

- Competitive product while not taking too much risks

Existing Policyholders

- New policy will have shorter term and stricter surrender policy, option to switch

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Conclusion

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Dilemmas and constraints

- Professional and technical constraints
- Stakeholder management
- Risk vs return

Regulatory guidelines

- Compliance
- Professional standards

Professional issues

- Professional code of conduct
- Communication and conflict of interest

Pricing Decision

- Pricing the product with limited premium
- Continuous risk monitoring pertaining to interest rate guarantees

Appendix - Japanese Life Insurance Industry

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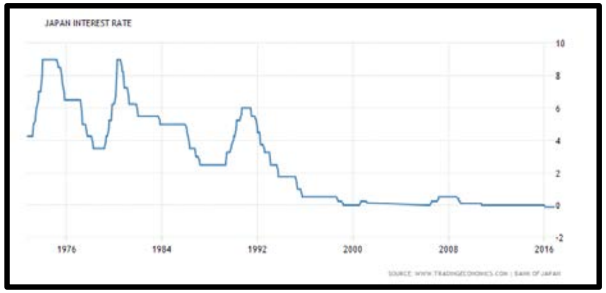
Impact of sudden decrease in interest rate and stay at low level for longer period of time

- Rapid decline in the interest rate in1980s, led to heavy sales in insurance products with high guarantees



- Insures invested their assets in stock market and shock in equity market led to large loss

- 8 out of 27 Japanese life insurance companies had defaulted from 1997 to 2008 due to “Negative Yield Spread”

- Insurers lost the policyholders’ confidence and led to large number of surrenders

- Steps taken by Japanese LI companies after sharp decline of Interest rate:
    - Stop selling high-yield saving products
    - Reduce guarantee interest rate and commission of saving products
    - Increase the policy reserves
    - Purchase longer term bonds to improve yields and reduce duration gap
    - Use of interest rate swaps to hedge the interest rate guarantee under annuity portfolio

Questions?

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Thank You

Case Study 5 Group

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