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Life Insurance / Investments

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Institute of Actuaries of India

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Case Study Overview

You are an actuary in the **group** business management division within an Indian life insurance company.

- The company offers traditional and unit-linked products for gratuity, superannuation, leave encashment
- To remain competitive, management wishes to offer high guaranteed investment return on **traditional** business which applies for at least **3 years** policy sale
- You are asked to discuss below with specific references to regulations and professional standards:
    1. Applicable investment regulations governing traditional and unit-linked group funds management business
    2. Issues from offering guaranteed investment return given volatile interest rate environment in India
    3. Options available to manage the risks of the investment guarantee if offered

Agenda

- Employee benefits - Overview
- Group Fund based insurance product - Overview
- Regulations and Professional Guidance
- Issues from offering guaranteed investment return
- Risk Management Options
- Japan - Case Study
- Summary

Employee Benefit Products - Overview

Gratuity – A Brief Overview

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Overview

- **Statutory Benefit** as per Payments of Gratuity Act, 1972
- Mandatory for companies with 10 or more employees

Eligibility

- 5 years of service
- Payable on retirement, resignation, death and disability
- No vesting in case of death or disability

Benefit

- Lump sum
- 15/26 x (Basic + DA) Salary x Service
- Capped at INR 20 Lakh (tax-free)
- Excess benefits are allowed (taxable)

Funding

- Un-funded (book provision)
- Funding vehicles (Employer Trust or Group Insurance schemes– Traditional or ULIPs)

Superannuation – A Brief Overview

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Overview

- Not a Statutory benefit
- Sunset Scheme
- Generally Employer-sponsored
- Enables employees plan retirement efficiently

Key Benefit Features

- Mostly Defined Contribution : Typically up to 15% of basic salary (capped to INR 1.5 Lakh due to tax implications)
- Minimum Service requirement: Depends upon Trust Rules (Generally 10 years of service or more)
- Payable on retirement, resignation, death and disability
- No vesting in case of death or disability

Benefit

- Lump sum plus monthly pension
- Pension is purchased from insurer (multiple form of payment choices available)

Funding

- Funding vehicles (Self-managed or Insurance company schemes– Traditional or ULIPs)

Leave Encashment – A Brief Overview

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Overview

- Minimum Annual leave entitlement and carryforward of unused leaves - As per Shops and Establishment Act (varies by state)

Eligibility

- All employees covered
- No minimum service vesting criteria
- Payable on retirement, resignation, death and disability

Benefit

- Lump sum
- General formula is

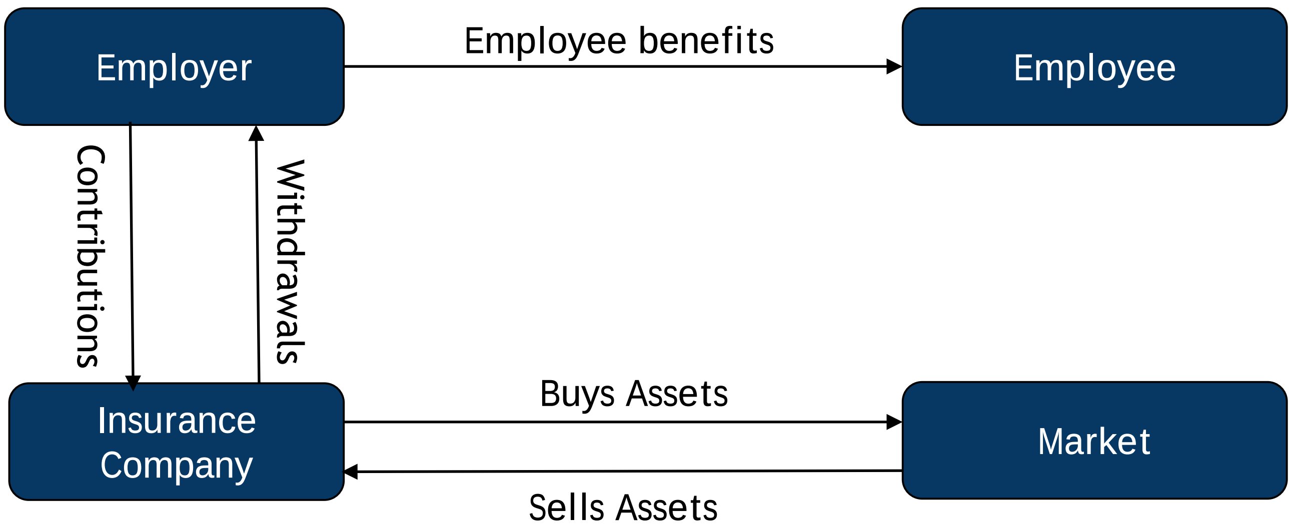
$$\frac{Salary\ x\ Leave\ Balances}{No.of\ days\ in\ a\ month}$$

- Salary for calculation may be Basic or Gross

Funding

- Mostly un-funded (book provision)
- Recent products introduced by LIC and other leading insurers

Group Fund based insurance product - Overview



Benefits for Employer:

- Leverage insurers expertise to manage assets
- Diversification of investments
- Protection against mortality and longevity risk

Benefits for Insurance Company:

- Fee-based asset management business with limited risks
- Group structure enables efficient management

Group Fund based insurance product - Categories

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Unit Linked

- Returns are linked to the market
- **Transparent** Charging structure
- **Flexible** investment options

Traditional

Non-Participating

- **Non-negative interest rate** credited over and above **guaranteed** floor rate
- **Less transparent** as investment expenses deducted
- **Smoothened returns** over period of time
- Market Value Adjustment (**MVA**) applicable in case of bulk exits
- Investments are as per company's **investment strategy** (governed by investment regulation)

Participating

- **Non-negative bonus rate** accrued to policy at end of every financial year
- **Surplus shared** between company and policyholder in a prescribed ratio
- **Less transparent** than ULIP
- **Smoothened returns** over period of time
- **MVA** is applicable in case of bulk exits
- Investments are as per company's **investment strategy** (governed by investment regulation)

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Investment regulations governing traditional and unit-linked group funds based insurance products

Regulations and Professional Guidance

Regulations	Actuarial Practice Standards (APS)	Guidance Notes (GNs)
IRDA Non-Linked Insurance Products Regulation, 2013	APS 1 - Appointed Actuary and Life Insurance Business	GN22 - Reserving for Guarantees in Life Assurance Business
IRDA Linked Insurance Products Regulation, 2013	APS 2 - Additional Guidance for Appointed Actuaries and Other Actuaries involved in Life Insurance	
IRDA Assets, Liabilities and Solvency Margin of Life Insurance Business Regulation, 2016	APS 3 - Financial Condition Report	
IRDA Investments Regulation, 2016	APS 5 - Appointed Actuary and Principles of Life Insurance Policy Illustrations	
IRDA Investments - Master Circular, 2016	APS 7 - Appointed Actuary and Principles for determining Margins for Adverse Deviation (MAD) in Life Insurance Liabilities	

Group Fund based insurance product – IRDA Investment Regulations, 2016

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Traditional Products

Type of Investment	Percentage allowed
Central Government Securities	Not less than 20%
Central Government Securities, State Government Securities or Other Approved Securities	Not less than 40% (incl (i) above)
Balance to be invested in Approved Investments	Not exceeding 60%

Approved Investments include:
Money Market instruments
Fixed Deposits with banks
Bonds or debentures issued by companies, rated not less than AA or its equivalent
Equity shares of listed company which has paid at least ten percent dividends for two consecutive preceding years

Unit Linked Products

-Investment as per pattern offered to and subscribed by the policyholders
-Each fund has it's own investment strategy, portfolio allocation in assets depends on the risk profile of the fund
-Funds are filed to the Authority for approval before being launched in the market

Investment Regulations - Derivatives

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IRDA Investments - Master Circular, 2016

Derivatives

As per the extant guidelines, Insurer can enter into derivative transactions only for **hedging** to reduce interest rate risk for forecasted exposures arising out of the following:

- Forecasted cash flows from **policies already written** adjusted for persistency
- Reinvestment risk of principal and interest payments from existing investments
- Hedging **not** permitted for unit linked products

There are currently 3 types of hedging instruments available in the market for managing interest rate risk:

- Forward Rate Agreements (FRAs)
- Interest Rate Swaps (IRS)
- Exchange Traded Interest Rate Futures (IRF)

Actuarial Practice Standards

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APS 1	Appointed Actuary and Life Insurance Business	-Ensure life insurance business is conducted on sound financial lines -Regards to policyholder reasonable expectations -Maintain high professional, technical and ethical standards
APS 2	Additional Guidance for Appointed Actuaries and Other Actuaries involved in Life Insurance	-Prudent assumption with appropriate margin for adverse deviation depending on Appointed Actuary's confidence on the parameter -Timely disclosure to the company and the authority about the financial viability of the company
APS 3	Financial Condition Report	-Assessment of the financial position of the company -Appointed Actuary shall identify situations which could lead to financial difficulty and include recommendations as to what might be done to avoid such circumstances
APS 5	Appointed Actuary and Principles of Life Insurance Policy Illustrations	-Educate the potential customer and not be used to achieve a competitive edge -Consistency of illustration with terms & conditions of the product filed with the Authority -Important information should not be withheld -Guaranteed benefits should be clearly distinguished from non-guaranteed benefits.
APS 7	Appointed Actuary and Principles for determining Margins for Adverse Deviation (MAD) in Life Insurance Liabilities	-Actuary must allow for adequate level of MADs while calculating reserve for the protection of policyholders. -Provides with the factors to be taken into consideration while applying for MASs -Provides the minimum MAD to be applied on various parameters

Guidance Note (GN) 22

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GN 22 - Reserving for Guarantees in Life Assurance

- Adequate reserve to meet the minimum guaranteed benefits
- Method to reserve for embedded derivatives like minimum guaranteed maturity or surrender value
- Economic Scenario Generator (ESG) - Stochastic modelling to quantify reserve
- Deterministic modelling in case no adequate stochastic model available
- Tail risk to be taken into account

Issues from offering guaranteed investment return given volatile interest rate environment in India

Implications of High Guaranteed Returns - Our interpretation of the situation

Traditional group fund product - Offer high guarantee for at least **3 years** (from sale of policy)

High Guarantee level - To be **competitive** and **marketable**

Returns earned above guarantee - To be **shared with policyholder** to enhance overall returns

Shortfall compared to guarantee - To be **funded by shareholder**

Guaranteed Return on Traditional Product - Advantages

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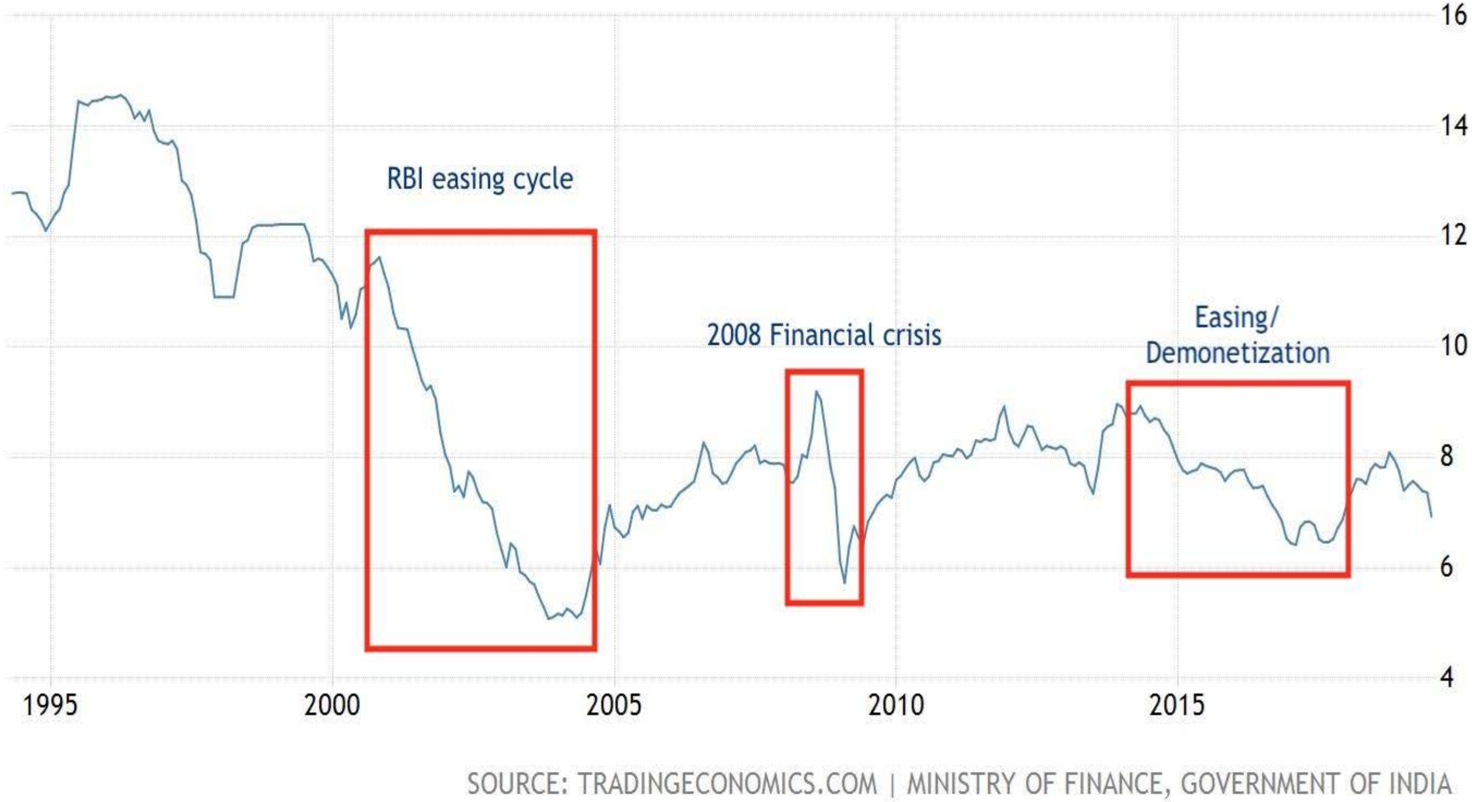
- Remain Competitive
- Increase AUM & long-term profitability if the risk is well-managed
- Help employers better manage investment portfolio
- Market buzz, improve brand name and opportunity to cross-sell products

Historical 10 Year G-Sec Rates in India

10 Year Bond Yield at 6.88% as of June 28, 2019.

All time high of 14.76% in April 96 and record low of 4.96% in October 03.



10 Year G-Sec Volatility

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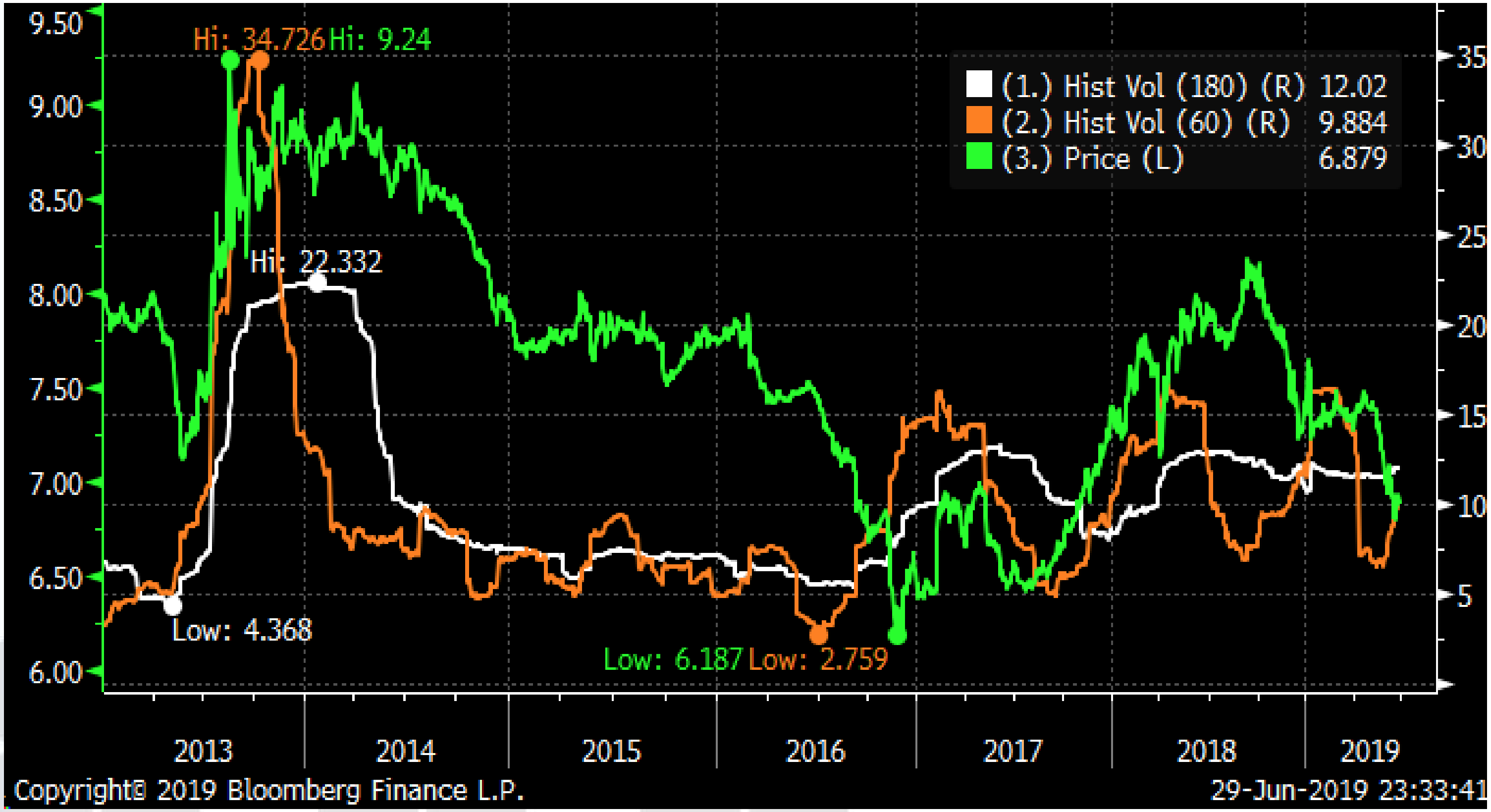
Bond yields are trending down and even though volatility has subsided from 2013 levels, it has a potential to continue



Profile of leading insurers in India

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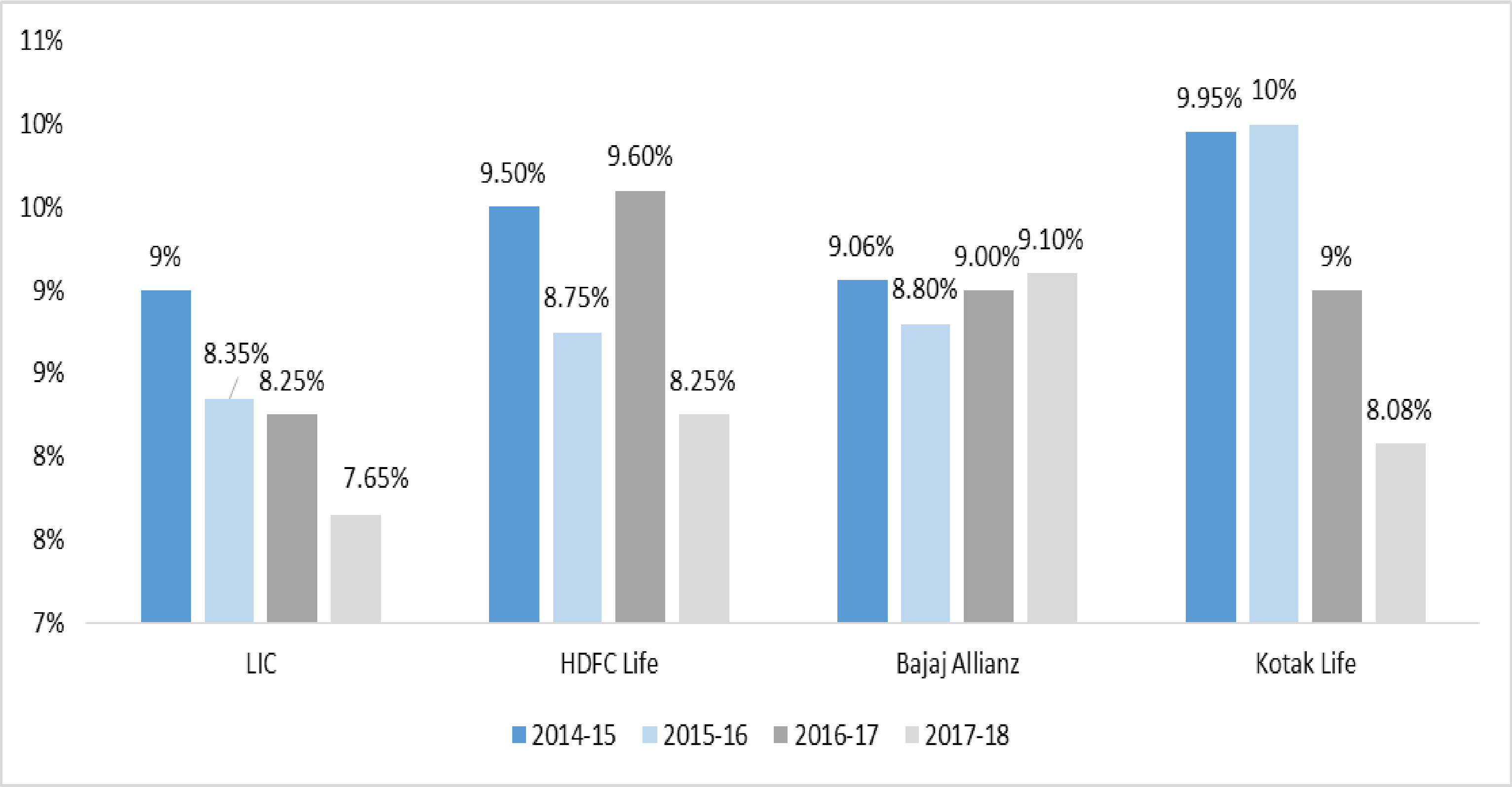
Company	LIC	HDFC Life	Bajaj Allianz	Kotak
Year of Incorporation in India	1956	2000	2001	2001
Total Assets under management (INR Crore)	2,845,000	106,600	51,970	25,128
Solvency ratio (as per IRDA requirement is 1.5)	FY 14-15 – 1.55* FY 15-16 – 1.55* FY 16-17 – 1.58* FY 17-18 – 1.58*	FY 14-15 – 1.96 FY 15-16 – 1.98 FY 16-17 – 1.92 FY 17-18 – 1.92	FY 14-15 – 7.61 FY 15-16 – 7.93 FY 16-17 – 5.82 FY 17-18 – 5.92	FY 14-15 – 3.13 FY 15-16 – 3.11 FY 16-17 – 3.01 FY 17-18 – 3.05
Market Share	69.40%	5.85%	2.20%	1.60% as of March 2016
Products Offered	Traditional	Both Traditional and Unit Linked	Both Traditional and Unit Linked	Both Traditional and Unit Linked
Minimum interest rate guarantee (Traditional/VIP Products only)	0.5%	1.0%	1.5%	2.0%

**Due to sovereign rating, solvency ratio of LIC is not compared with private sector players.*

Group Insurance Traditional Product - Past Investment Returns



- Volatile returns - 3 insurers showing declining trend
- Guarantee level provided by insurers are much lower than overall returns provided

Guaranteed Return on Traditional Product - Disadvantages

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- Challenges around pricing of guarantee accurately
- Decrease in overall returns (due to possible conservative investment strategy for the guarantee risk and to fund the increased cost of capital)
- The 'post guarantee' overall return might not be as lucrative as other competitors overall return. This may lead to higher withdrawals or loss of business volumes
- High risk management cost (given volatility of interest rates in India)
- Company is exposed to the risk of fall in interest rates (if the reinvestment and duration risks are not sufficiently hedged)
- Exposure to high interest rate risk where in the withdrawals by employer from the fund might increase as an anticipation for better returns. It exposes to liquidity risk and forced selling of securities at an unfavorable price
- Increase in exposure towards counterparty default risk
- Increase in dependency over the fund manager

Guaranteed Return on Traditional Product - Design Recommendations

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- Set realistic level for guarantee using stochastic models/scenario testing
- Provide guarantees for a limited time-period which is both marketable as well as financially viable
- Provide guarantee only on initial contribution – renewal contribution are unknown
- Provide guarantee on renewal contribution at the prevailing rate when renewal contribution is received
- Introduce surrender charges as permissible by regulation in case of surrender in initial 3 years - this will discourage policyholders from surrendering in case market yields go up and we have already locked in our future yields
- Allow for market value adjustment in case of bulk exits
- Index linked guarantee instead of absolute guarantee (for example guarantees where returns are "SBI base rate - X%")
- Providing real guarantees instead of nominal guarantees - avoiding exposure to inflation volatility

Guaranteed Return on Traditional Product - Risk Management Options

Guaranteed Return on Traditional Product - Risk Management Options

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Stochastic modelling to validate the cost of guarantee

Stress testing with particular focus on low interest rate scenarios

Proper framework and governance of investment strategy

Regular meeting with Investment committee and review over future outlook

Continuous **monitoring** of guarantee provided

Investment in secured instruments

Usage of interest rate derivative to hedge the risk

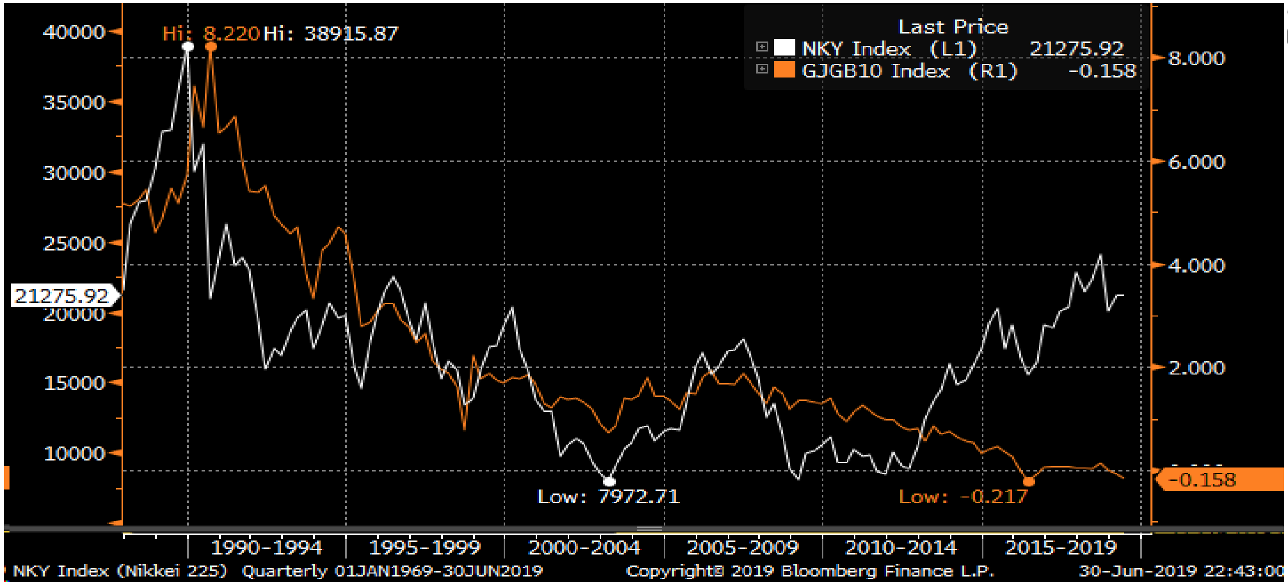
Smoothening of returns - keeping a margin for future adverse scenario

Modify product if guarantee level becomes strenuous

Guaranteed Return on Traditional Product - Risk Management Options

Strategy	Pros	Cons	Constraints
Hedging using derivatives	-Lock in of future yields -Useful when asset of same tenure unavailable	-Comes with a cost -Complex products	Set up and administration
Smoothening of returns	-Margin kept against fall in interest rate	-Possibility of lower returns compared to competitors -May lead to increase in withdrawals	Policyholder Reasonable Expectations
Robust Reserving Methodology	-Better reflection of guarantee liability	-Impacts profitability, margin	Dependency on model and assumption
Allocation to secured assets	-Reduced volatility of the portfolio	-Overall lower return	IRDA regulations; PRE on fund performance

Japan – Case Study



- Sudden & extended decline in interest rates in 1980's
- Insurers switched to risky assets and suffered losses by investing in equities and from foreign currency holdings following appreciation in JPY
- 8 Japanese life insurance companies were liquidated from 1997 to 2003
- Insurers lost the policyholders confidence leading to mass surrenders
- Risk mitigation actions by insurance companies:
  - ✓ Stop selling high-yield saving products
  - ✓ Reduce guarantee interest rate and commission of saving products
  - ✓ Increase the policy reserves & purchase the longer term bonds to improve yields and reduce duration gap
  - ✓ Use of interest rate swaps to hedge guarantee

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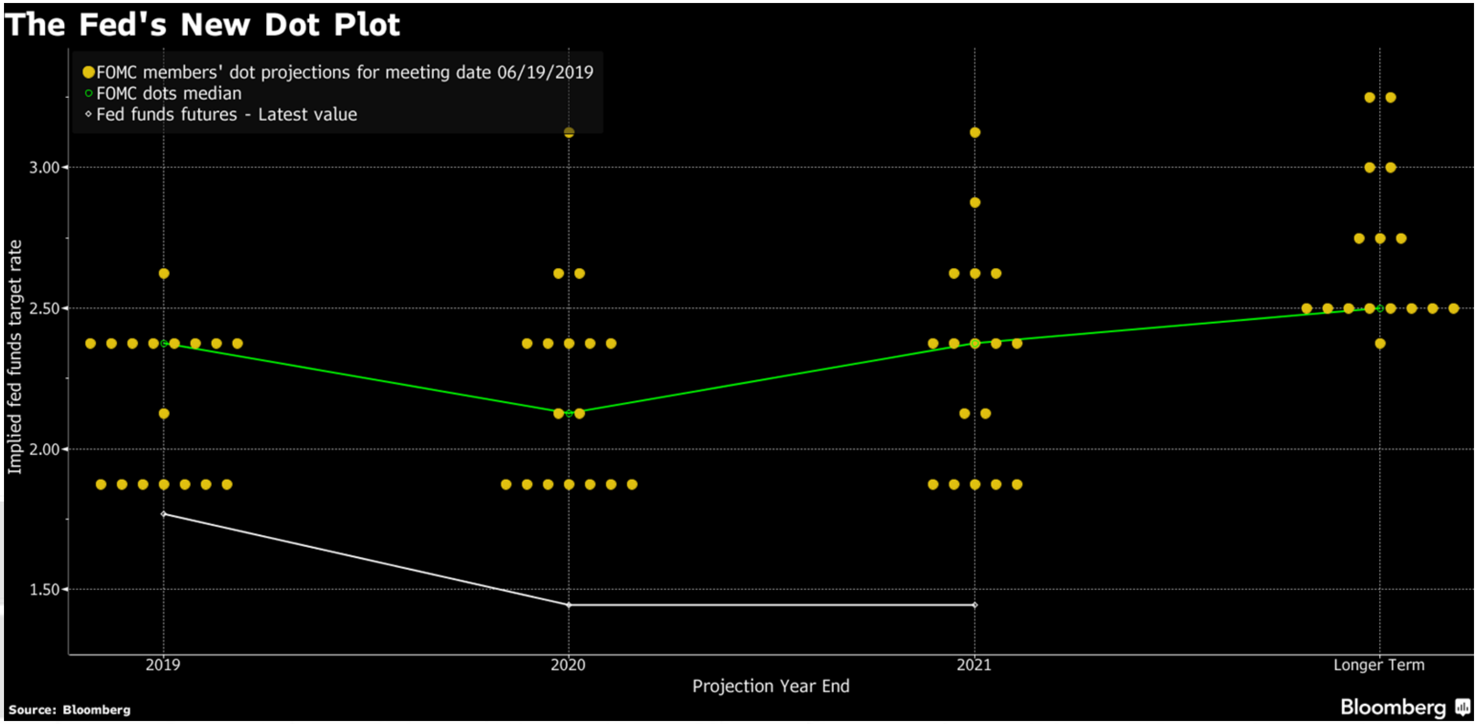
Global Interest Rate Outlook

- Trade war / tariffs, late cycle economy, geopolitical tensions and slowdown in economic data
- Market pricing Fed rate cut (25-50 bps) in July 2019 meeting
- Fed's June dot plot is a bimodal distribution suggesting uncertainty in US and therefore global interest rates



Summary

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Volatility in interest rates	• Interest rate risk under low interest scenarios • Geopolitical tensions, trade wars and slowing growth further increases volatility • Challenge to hedge in a less developed and liquid interest rate markets
Mitigation Options	• Product design by striking feasible guarantees, reducing tenure of guarantee, market value adjustments, linking guarantee to other indexes • If product already launched - interest rate hedging, close monitoring and communication, appropriate asset allocation
Guidance	• Follow appropriate regulatory and professional standards • Lessons from countries that have already faced the burden of interest rate guarantees

QUESTIONS?

Appendix

- IRDAI - https://www.irdai.gov.in
- Graphs - https://tradingeconomics.com/ and Bloomberg
- APS and PCS - http://www.actuariesindia.org
- Insurance company websites and annual reports