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ANALYSIS OF SUCCESS OR OTHERWISE ON USE OF DERIVATIVES TO HEDGE INVESTMENT RISKS IN INDIA

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Guide Name - Rajesh Dalmia

Presenter Names:
Rushabh Shah
Pratik Agarwal

AGENDA

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BACKGROUND

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BACKGROUND

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- *Investment risk* can be defined as the probability or likelihood of occurrence of losses relative to the expected return on any particular investment. Some sources of investment risk are:
  - Market risk
    - **Interest rate risk (Price risk)**
    - Equity risk etc.
  - **Credit risk**
  - **Reinvestment Risk**
  - Currency/Exchange Rate Risk
  - Liquidity risk etc.
- As per IRDAI regulations, insurers are allowed to purchase derivatives to hedge the risks that are highlighted in red. Hence, our focus will be on these risks.

CREDIT RISK

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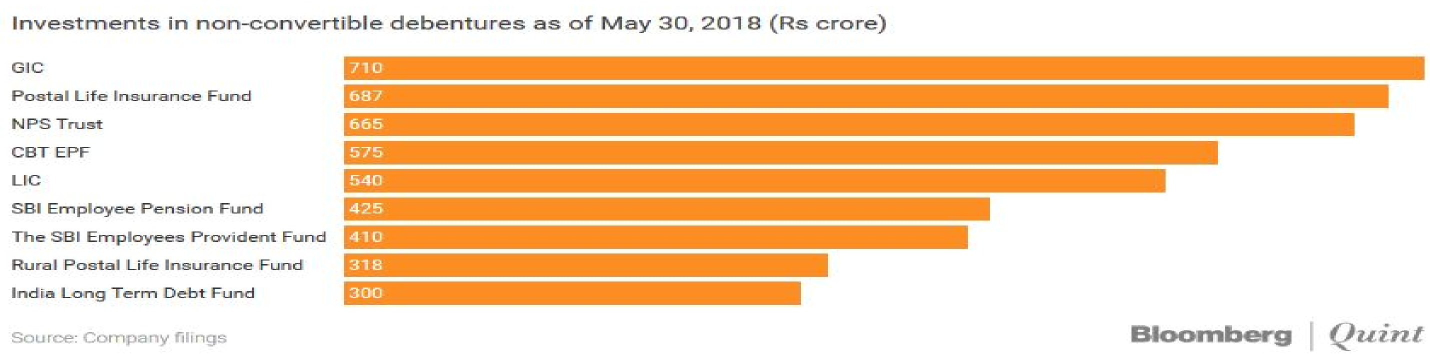
CREDIT RISK

- It is the risk of a counterparty failing to meet a payment. Insurers invest in corporate bonds and equities and are exposed to risk of default.
- IRDAI guidelines in 2012 allowed insurers to purchase Credit Default Swaps (CDS) on Corporate bonds to hedge credit risks.
- The first Credit Default Swap transaction in India took place in 2011 between ICICI Bank and IDBI Bank. Till August 2012 there were only 3 CDS transactions worth INR 15 crores.
- Recent default by IL&FS highlights the need for credit protection. Some of the exposures to IL&FS non-convertible debentures of Insurers were below:



- IRDAI does not allow CDS purchases on non-convertible debentures.

CREDIT RISK

- Restrictions imposed by RBI/IRDAI regulations in allowing CDS trades are in light of the 2008 financial crisis.

Key restrictions:

- FII's and Hedge funds which typically have a big appetite for credit risk are not allowed to sell protection in India.

- Capital restrictions on entities allowed to make markets e.g. net NPA's <3%, minimum CRAR of 12% for commercial banks and 15% for NBFC's & PD's.

Some alternatives to develop the market:

- Reduce the capital requirements of market makers to incentivise them to sell more protection.

- Reduction in reserve requirements for funding of bond against which a CDS is purchased.

- Purchase of Credit Spread Options/Credit Insurance cover may also be an option to hedge credit risk.

INTEREST RATE & REINVESTMENT RISK

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BACKGROUND

Reinvestment & Interest Rate Risk

High Impact

- **Non Par Non Linked Products**
  - Guaranteed benefits and hence adverse interest rate movement will impact profitability
  - Large impact for annuities due to long term nature of the contract

Medium Impact

- **Participating Non linked Products:**
  - Lower risk than non-par products as policyholders participate in profits.
  - However, Investment income should be enough to meet **PRE**

Low impact

- **General Insurance & Health Insurance**
  - Short Term contracts
  - Most of the contracts are single pay

Least Impact

- **Linked Products**
  - Most of the interest rate risk is borne by the policyholder
  - May impact non unit reserve and inbuilt guarantee

The above impacts may differ basis products features and company specific philosophy.

DERIVATIVE REGULATIONS – TIMELINE OF CHANGES

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2000 – IRDAI guidelines Section 11

2004 – IRDAI guidelines on use of derivatives

2014– Guidelines on interest rate derivatives

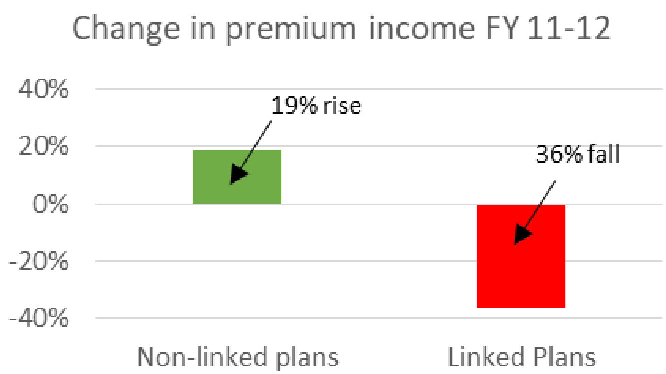
- IRDAI issues first set of guidelines stating that dealing in financial derivatives is permitted in accordance with guidelines issued by the authority from time to time

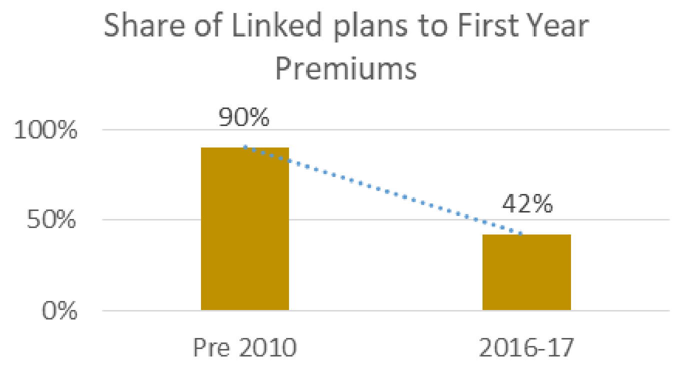
- IRDAI allows life and general insurers to deal in financial derivatives for hedging interest risk on investments and forecasted transactions
- Permitted use of derivatives with a maturity of 1 year.

- Maximum Maturity term for derivative contracts used for hedging extended to 10 years
- Allowed to hedge reinvestment proceeds, expected premiums on existing business beyond 1 year

REGULATIONS – A BRIEF HISTORY

- 2010 – IRDAI brings in more guidelines for linked plans - Surrender and other charges capped, agent commissions reduced (especially in first year), lock-in period increased.





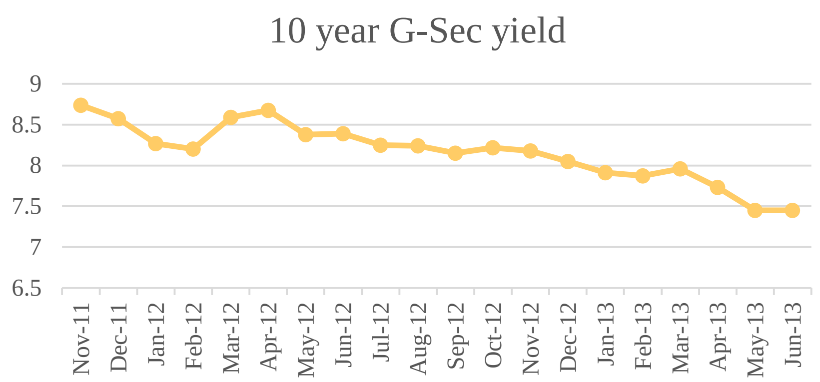
- Shift in focus initially towards products offering higher guarantees and traditional plans e.g. highest NAV plans
- 2012 – IRDAI stops highest NAV type guaranteed products.
- Increased focus on traditional products – share of linked plans reduced to 29% of first year premiums in 2013-14.

Source: *IRDAI handbook of statistics and annual reports*

REGULATIONS – A BRIEF HISTORY (2)

- Investment risk related to interest rates increased for insurers as most risk under unit linked plans was with the policyholder.

- Yields on 10 year G-sec fell almost 150 basis points between 2012 and mid 2013. Fall in yields would increase the cost of purchasing bonds.



- 2014 – IRDAI issues investment guidelines on investment in derivatives. Some of the reasons for the changes mentioned in the notification were:
  - Change in product structures
  - Changing investment environment
  - Change in guidelines form other regulators like RBI

Source: RBI website

CURRENT IRDAI INTEREST RATE DERIVATIVE REGULATIONS

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Permissible instruments	• Interest Rate Futures • Interest Rate Swaps • Forward Rate Agreements
Purpose for hedging	• Forecasted cash flows • Re-investment risk of principal and interest rate payments from existing instruments
Exposure limits	• Current Exposure Method for OTC contracts • Maximum exposure of 100% of the book value of the fixed income investments
Governance and policies	• Board approved interest rate derivative and risk management policy • ISDA master agreements and CSA to be used for OTC derivatives amongst other requirements
Maturity	• Maximum of 10 years permitted.

IMPACT ON PRODUCT PROFITABILITY

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EXAMPLE PRODUCT

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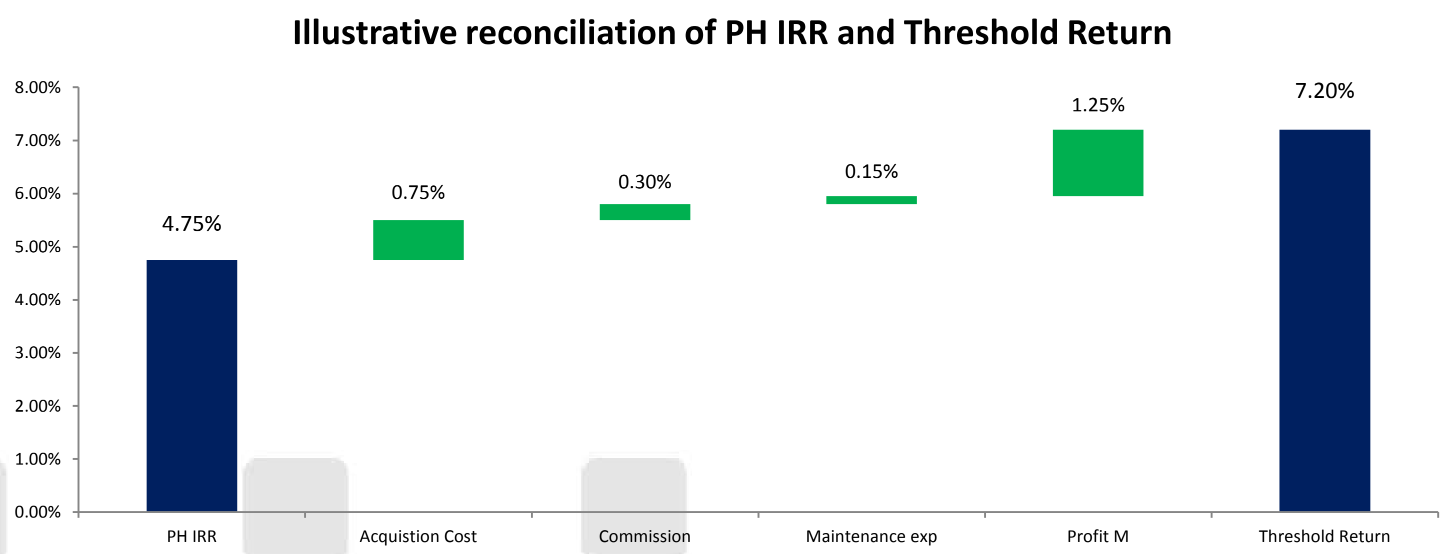
Regular premium Non Par Product

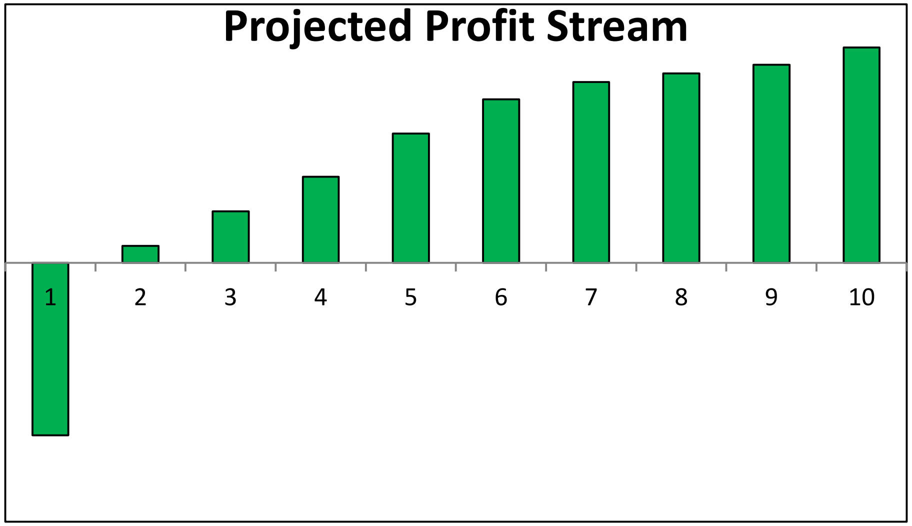
Product attributes:

- Premium payment term – 5 to 10 years
- Maturity benefit payout from 15 to 30 in multiple of 5
- Guaranteed policyholder IRR ~ 4.3% to 5%

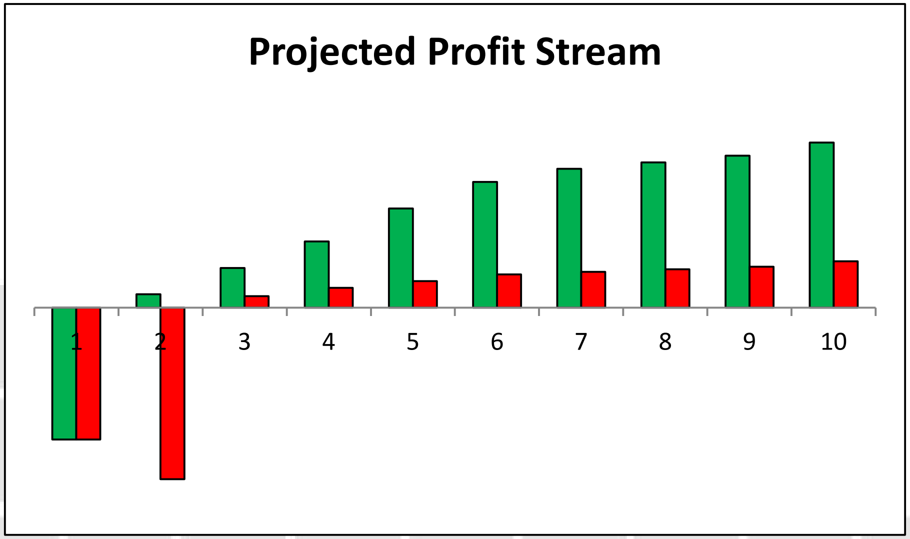


The threshold limit for investment after accounting for other parameters hovers between 7% to 7.5%`

IMPACT ON PROFIT STREAM



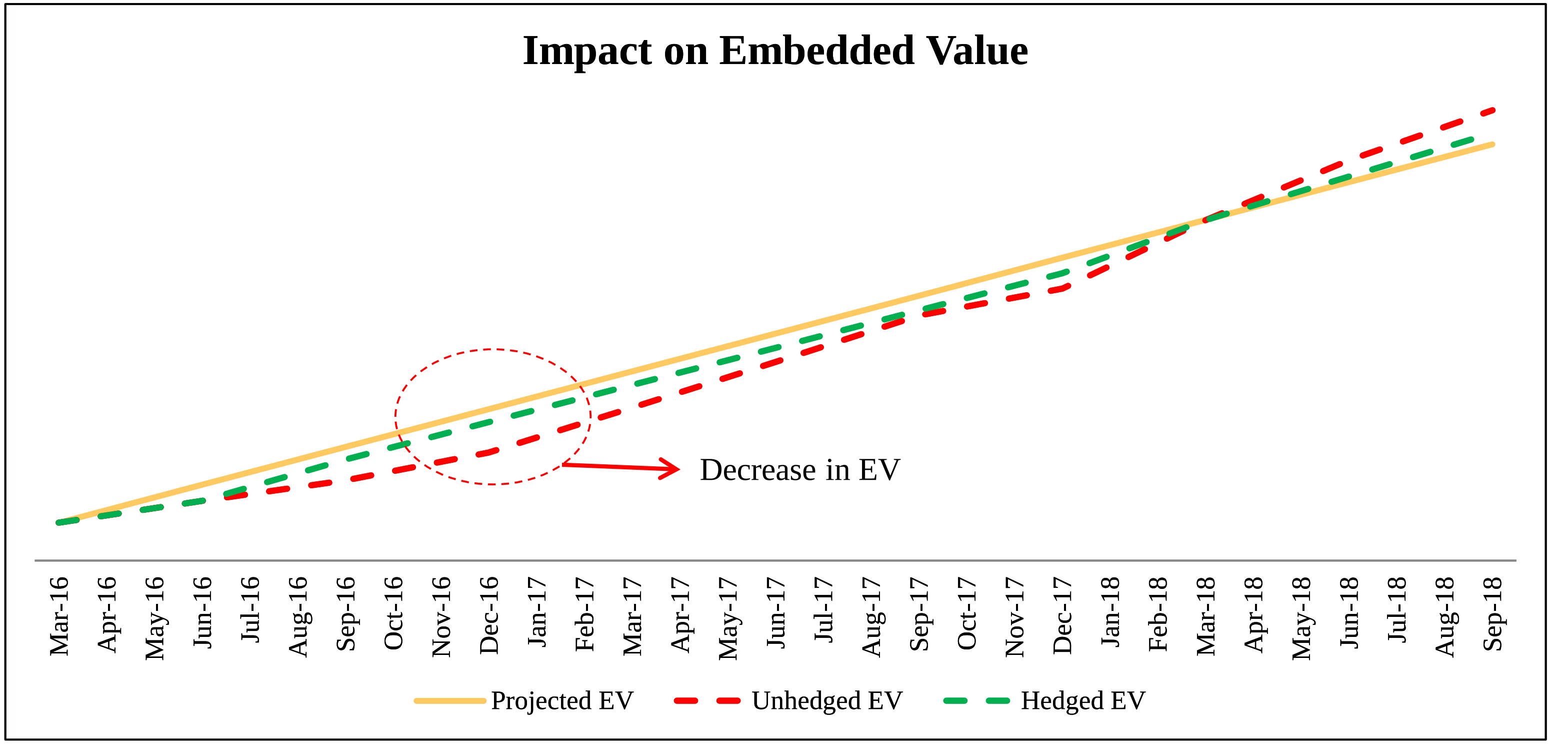
The first chart shows the profit stream if the projected profit stream if the investment incomes is within the threshold limit of 7% to 7.5%



However, the drop of 100 basis point can alter the profit stream from the green bars to the red bars.

It may thus completely wipe out the profit surplus of 1.25%.

IMPACT OF HEDGING



- The above chart shows the impact of interest fluctuation on EV during the last 2.5 years. EV of an unhedged company would have been volatile for the past two years.
- Hedging would restrict the volatility of EV.
- The interest rate for 10 yr Gsec have fluctuated from 7.51% in Mar 16 to around 6.46% in Jun 17 to 8.02% in Sep 18

HISTORIC G-SEC YIELDS AND INFLATION IN INDIA

- G-sec yields have been very volatile since 2001.
- Yields have been falling in the past and are showing a declining trend currently

INTEREST RATE COMPARISON

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Comparative 10 year bond yields (India, US, UK and Japan)

EVOLUTION OF THE MARKET

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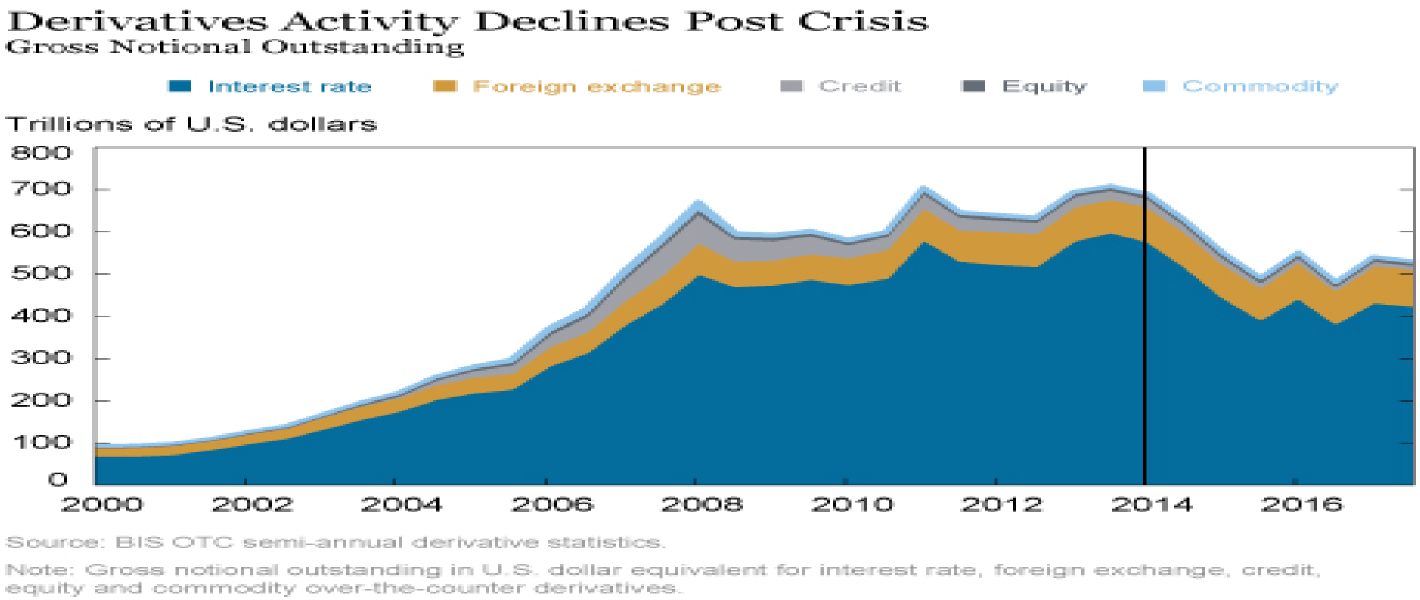
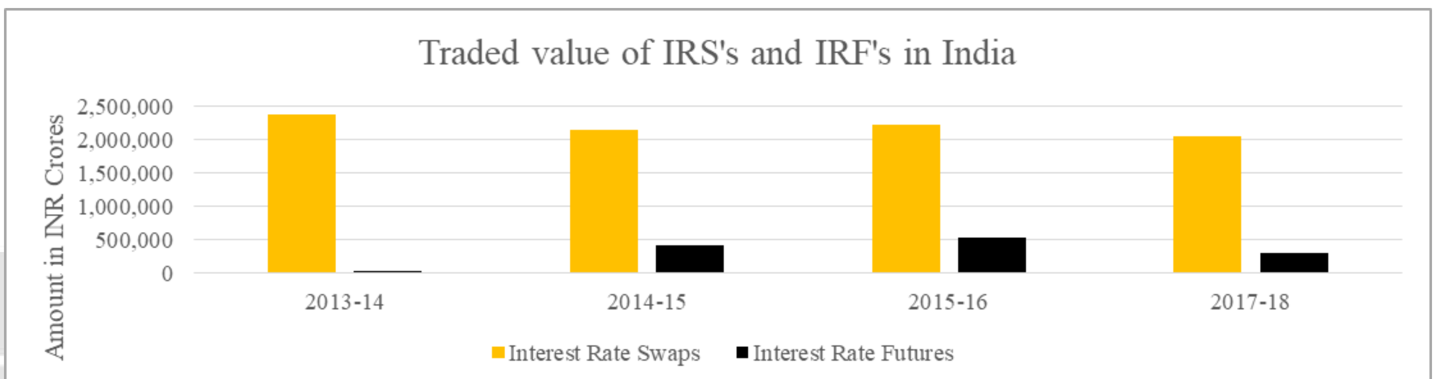
SIZE OF THE DERIVATIVES MARKET





India contributes only 0.1% to the global interest rate OTC derivative trade.

Source: CCIL Rakshitra, NSE website, BIS

INDUSTRY RESPONSE TO REGULATION CHANGE

- Derivatives were not used since the maturity was restricted to one year.
- Market more focused on ULIP products

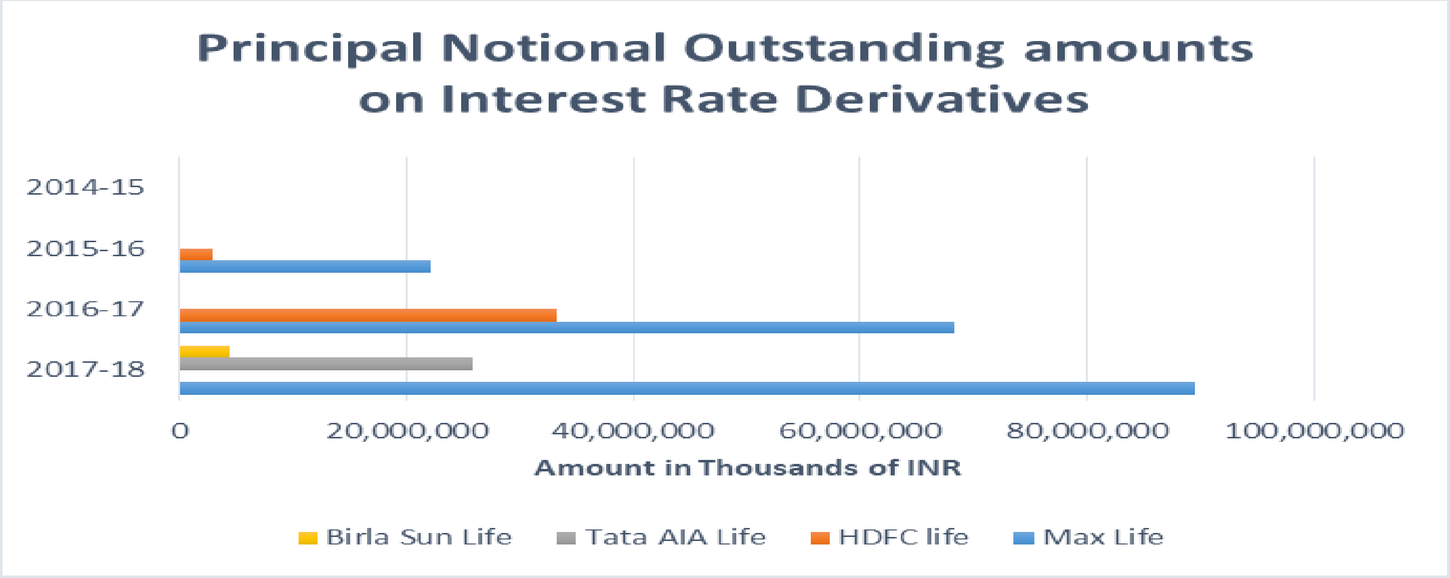
- Changes in ULIP regulations
- Shift towards conventional products.

- With hedging cash flows up to 10 years allowed
- Industry started evaluating various options for hedging

- Companies tried using RDs for hedging. But cap on RD holding limited their use
- IRF and IRS were used initially.
- However, both hedging tools didn't yield desired results
- Development of systems for use of Derivative

***Recurring Deposit (RD)**

DERIVATIVES – INDIAN INSURERS EXPOSURE



- Edelweiss Tokio Life also had exposure to Interest Rate Futures over the period 2016-17.
- Only a few life insurers were observed to have exposure to interest rate derivatives for hedging.
- 1 insurer is using IRS, 2 are using FRA's and 2 are using IRF's for hedging

Source: Company annual reports and audited financial statements

DERIVATIVES – INDIAN INSURERS EXPERIENCE

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- The key driver for insurers to use derivatives appears to be the increase in the maximum maturity of derivatives allowed for hedging to 10 years.
- Insurers have been observed to be using the hedge for interest rate risk on forecasted premium receivable at a future date.

Financial impact of the hedges carried out as disclosed in company annual reports:

- **Birla Sun Life** – 2017-18 MTM loss of INR 31,676k reported at the balance sheet date (as per Schedule 10.1.b of annual report 2017-18)
- **TATA AIA Life** - 2017-18 MTM loss of INR 157,060k reported at the balance sheet date.(as per Schedule 16.ii. of annual report 2017-18)
- **HDFC Life** – 2015-16 MTM gain of INR 2,159k reported at the balance sheet date (as per Schedules 11 of the annual report 2016-17)
- **Max Life** – 2017-18 MTM liability of INR 261,770k reported at the balance sheet date. 2016-17 MTM liability of INR 80,685k reported at the balance sheet date. (Note 38 of 2017-18 annual report)

INDUSTRY EXPERIENCE

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	Interest Rate Swap	Interest Rate Future
Advantages of Instrument	▶ Removes uncertainty about interest rate. ▶ Floating rate assets is converted into Fixed rate assets ▶ Customized as per one's requirement	▶ Exchange trade and hence devoid of credit risk. ▶ Cost effective compared to other interest rate derivative. ▶ Removes uncertainty about interest rate. Floating rate assets is converted into Fixed rate assets
Industry Experience	▶ The liquidity for IRS is available for contracts up to five years which was inadequate given the long term liability of insurance contracts. ▶ The level of customisation was also limited. ▶ Liquidity lower than the desired level	▶ The cost advantage was offset to a certain extent due to higher than anticipated rollover cost ▶ Lower liquidity is still a hurdle. ▶ IRF contracts only available on few bonds increases the basis risk of hedging.

CHALLENGES FOR FRAs

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- **Liquidity** - Not much volumes of trade in the FRA markets. – Market makers may desert the market when yields begin to rise.

- **Collateral** - Cost of maintaining margin for FRA contracts may outweigh the advantage. **Counterparty risk** is always attached with OTC instruments. This risk may materialise at the times of crisis.

- **Opaque pricing methodology** – The pricing of the FRAs are done by Investment Banks. The insurer are not aware about their approach and methodology in detail.

ALTERNATE SOLUTIONS

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Use of other derivatives

- RBI introduced **Interest Rate Options** in January 2017 – both OTC and exchange traded.
- RBI also allowed the use of **Interest Rate Swaptions** in its circular dated 14 June 2018.

Purchase of Assets

- Purchase of assets today for future inflows
- Pros:
  - Accurate Cash flow matching
- Cons
  - Limited availability of internal capital
  - Borrowing not allowed for liability funding

Use of RD and PPB

- Investment in instruments like RD and PPB
- Pros:
  - No cost incurred
  - Can be used to match cash flows.
- Cons
  - Limited availability of PPB
  - Regulatory Cap on investment in RD

***Recurring Deposit (RD)**
Partial Payment Bond (PPB)

SUMMARY

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- Derivative markets in India are still in a nascent stage – volumes of trade are low.
- Change in product structures, investment environment and other regulations led to derivative guidelines changing in 2014
- A few life insurers have been using interest rate derivatives in the past since the new regulations came out.
- Need for insurers to participate more in the derivative markets to create a market with banks acting as counterparties.
- Possible challenges exist in pricing derivatives due to their complex nature.
- Development need of Investment management systems for derivatives.

QUESTIONS?

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APPENDIX

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