

Equity-Indexed Annuities: A View from 1,000 feet

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Outline of Today's Presentation:

- Product Description and Features
- Trends in EIA
- Sample Policy – how does it work?
- Statutory Valuation
- GAAP Valuation

EIA Product Description

- Indexed fund value increases based on stock index (such as S&P 500, Nasdaq, etc.).
- Attractive to Policyholders because:
 - Equity Market Participation
 - Downside Protection
 - Choice of Options

EIA Features

- **Option Type** – How is the amount credited to the policyholder determined?
 - Point-to-Point (European)
 - Average (Asian)
 - Annual Ratchet
 - Binary
 - Monthly Cap

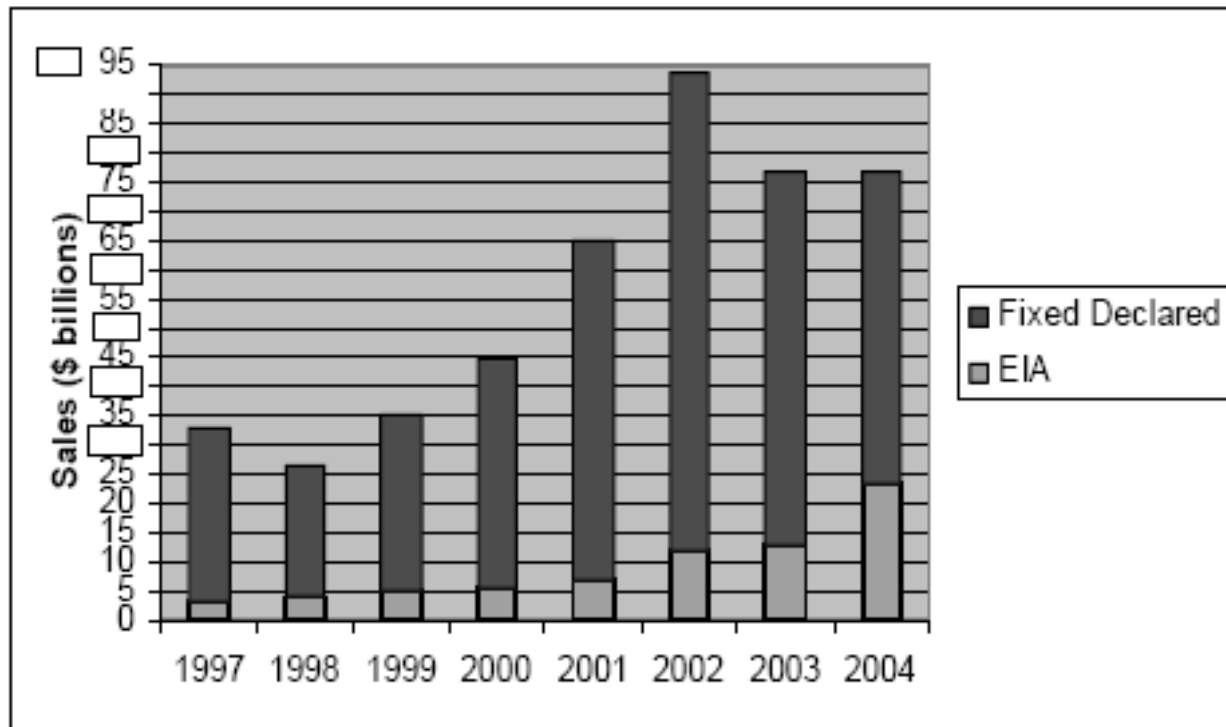
EIA Features

- What are the parameters of your option type?
 - Option Term
 - Participation Rate
 - Option Cap
 - Spread / Margin
 - Policy Term
 - Guaranteed Minimum Nonforfeiture Value
 - ROP Floor

EIA Features

- Trends in EIA:
 - Surrender Charges: Higher levels that last longer are common, cliffs schedules also common
 - Commissions: generally 1-2% higher
 - Day One Bonus: common for recent issues
 - Guaranteed Participation rate floors / Guaranteed Cap floors
 - Hot Topic: will EIA some day need to be registered?
 - Sales of EIA have steadily increased – see graph

Fixed Deferred Annuities Recent Sales History



Source: LIMRA International

Slide 5

Graph from Session 31PD of Val Act Symposium 2005, compliments of D. Patterson

Example – Annual Ratchet

- Participation 75%
- Initial index: 1000
- Initial deposit: \$20,000
- Guaranteed value: 90% premium with 3% interest

Example – Annual Ratchet –Year 1

- Participation 75%
- Initial index: 1000
- Initial deposit: \$20,000
- Guaranteed value: 90% premium with 3% interest

■ End of year 1:

-Index: 1100

-Index credit: $\$20,000 \times (1100/1000 - 1) \times 75\% = \$1,500$

-Indexed account value: \$21,500

-Guaranteed minimum value: $\$20,000 \times 90\% \times 1.03 = \$18,540$

Example – Annual Ratchet Year 2

- Participation 75%
- Initial index: 1000
- Initial deposit: \$20,000
- Guaranteed value: 90% premium with 3% interest

- End of year 1:
 - Index: 1100
 - Index credit: $\$20,000 \times (1100/1000 - 1) \times 75\% = \$1,500$
 - Indexed account value: \$21,500
 - Guaranteed minimum value: $\$20,000 \times 90\% \times 1.03 = \$18,540$

- **End of year 2:**
 - Index: 900
 - Index credit: $\$21,500 \times (900/1100 - 1) \times 75\% = -\$2,932$
 - Annual Ratchet indexed account value: \$21,500
 - Guaranteed minimum value: $\$18,540 \times 1.03 = \$19,096$

Equity-indexed Annuities

Statutory Valuation

Actuarial Guideline XXXV

- Interprets CARVM for EIAs
- Type 1 methods – rare
- Type 2 methods – not rare

Actuarial Guideline XXXV

- Interprets CARVM for EIAs
- Type 1 methods
 - Consistent with CARVM if “hedged as required.”
 - Predictable reserves – gains/losses offset by hedges.
 - Appropriate for spreadsheet valuation.
 - Onerous reporting requirements.

Actuarial Guideline XXXV

- Interprets CARVM for EIAs
- Type 2 methods
 - Consistency between assumptions underlying option market values in reserves and statement value of options owned to support business.
 - Volatile reserves.

Actuarial Guideline XXXV, cont'd

- Type 1 methods
 - Enhanced Discounted Intrinsic Method (EDIM)
- Type 2 methods
 - CARVM with Updated Market Values (CARVM with UMV).
 - Market Value Reserve Method (MVRM).
 - Black-Scholes Projection Method (BSPM)
 - Adaptation of MVRM.

Equity-Indexed Annuities

GAAP Valuation

GAAP for EIA

- GAAP Valuation – combination of
 - *FAS 97* (for DAC)
 - *FAS 91* (for Host Contract)
 - *FAS 133* (balance sheet and EGP presentation)

Authorities...

- FASB document (FAS133)
 - Some contracts contain “embedded derivatives”
 - If not a hedge, must be separated from “host contract” and accounted for as a derivative.
 - “...gain or loss shall be recognized currently in earnings”
 - Host contract “accounted for as if ED were not present”

Authorities...

- Derivatives Implementation Group (DIG)
 - “The carrying value assigned to the host contract is the difference between the proceeds received from the issuance of the hybrid instrument and the fair value of the embedded derivative.”
 - $HC(0) = \text{Initial Premium} - VED(0)$

Authorities...

- Derivatives Implementation Group (DIG)
 - “The insurer should ignore any minimum liability that exceeds the sum of the embedded derivative separately accounted for and the host debt instrument that is accounted for applying the debt model.”
 - This rejects the use of a Cash Value floor.

GAAP for EIA

■ New Terminology

- Value of Embedded Derivative (VED)

- Actuarial Present Value of expected benefits in excess of guaranteed benefits

- Host Contract (HC)

- Defined below

GAAP for EIA

■ Components of Balance Sheet

– Assets

■ Bonds – from cash flow

- Premiums less benefits
- Less expenses & commissions
- Less cost of hedging
- Plus hedge maturities

– Fair value of hedge

– DAC – to be discussed later

– Sales Inducement Asset



GAAP for EIA

- Components of Balance Sheet (Cont'd)
 - Liabilities
 - Fair Value of Embedded Derivative
 - Discount excess benefits with interest & persistency
 - Sales Inducement Liability
 - Value of Host Contract...

GAAP for EIA

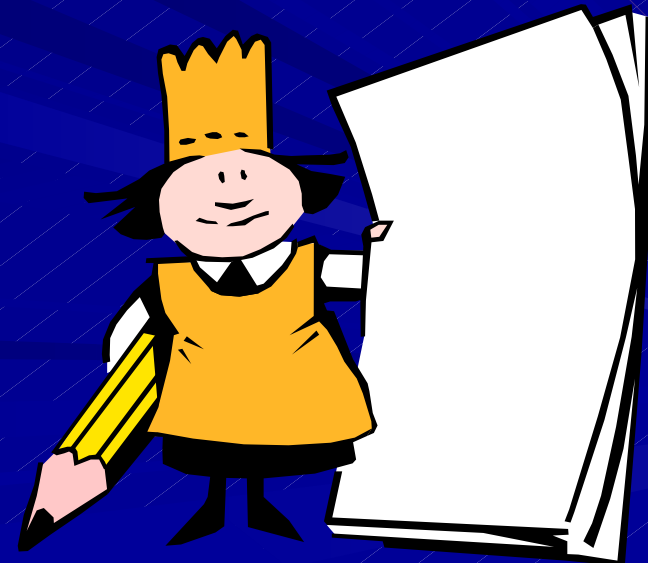
- Components of Balance Sheet (Cont'd)
 - Liabilities
 - Value of Host Contract – use *FAS 91* technique
 - At issue, premiums less associated VEDs
 - Target value: final maturity value
 - Negative cash flow based on Guaranteed Benefits
 - Based on pure guarantee, not enhanced guarantee
 - Calculate Internal Rate of Return (Interest on Host Contract)

GAAP for EIA

■ Components of Earnings

– Revenues

- Investment income on bonds
- Realized Gains on Investments
- Gains on hedge instruments – both realized and unrealized
- Surrender Charges



GAAP for EIA

- Components of Earnings
 - Expenses
 - Interest on Host Contract
 - Increase in VED
 - Recurring policy expenses
 - Net amortization of DAC
 - Accrual of Persistency Bonus

GAAP for EIA

■ Components of EGP

– Revenues

■ Earned Interest on Bonds

- Base is total GAAP liability less hedge

– Gains on hedge

■ Same as income statement

– Surrender Charges

■ Same as income statement

GAAP for EIA

■ Components of EGP

– Expenses

- Interest on Host Contract
- Increase in VED
- Recurring policy expenses
- These are all the same as income statement

GAAP for EIA

■ DAC Calculation (1)

- Calculate stream of EGPs
- Calculate stream of Acquisition Costs
- $k = (\text{PV Acq Costs}) / (\text{PV EGP})$
- What is the discount rate? (Your problem...)

GAAP for EIA

■ DAC Calculation (2)

- DAC = Start with prior DAC
 - Plus Interest at Discount Rate
 - Plus new acquisition expenses
 - Less Amortization = $K \times EGP_t$



Any Questions?

Thank you!