



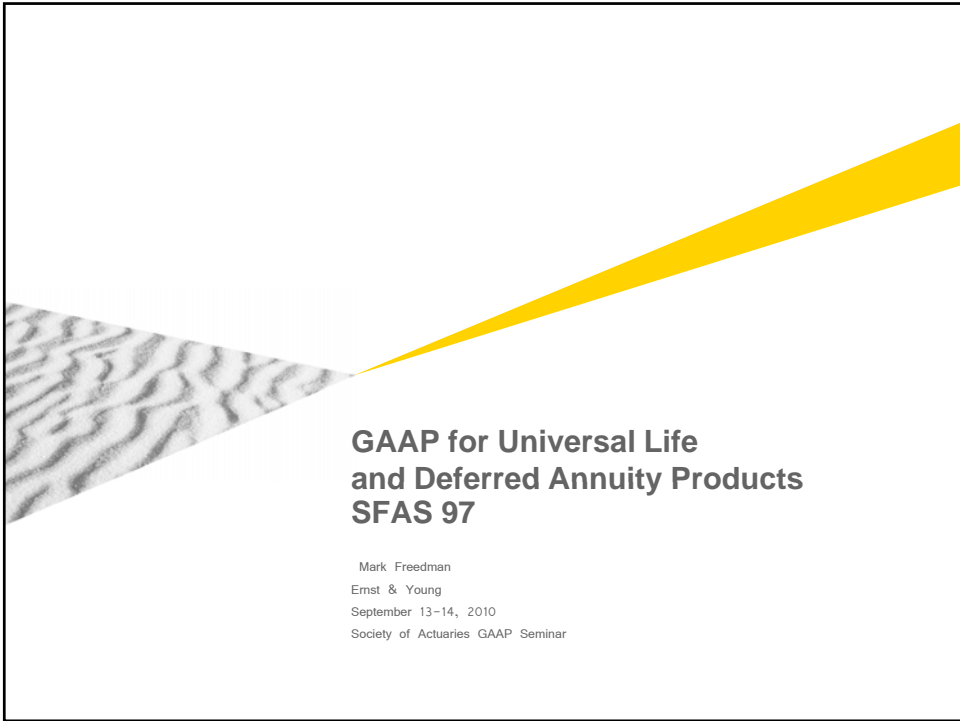
SOCIETY OF ACTUARIES

U.S. GAAP & IFRS: Today and Tomorrow
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New York

Universal Life and Deferred Annuities Under
GAAP

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Agenda

Overview
Benefit reserves
Deferred policy acquisition costs
Assumptions
Earnings patterns
Practical issues
SOP 03-1 and SFAS 133

Overview

SFAS 97

- ▶ Issued in 1987
- ▶ Prescribed accounting rules for stock life insurance companies for 3 classes of contracts:
 - ▶ Investment contracts
 - ▶ Universal life type contracts
 - ▶ Limited-payment contracts

Investment contracts

- ▶ Insignificant mortality or morbidity risk
- ▶ Examples
 - ▶ GICs
 - ▶ US style fixed deferred annuities during accumulation phase
 - ▶ Immediate annuities without life contingencies

Universal life type contracts

- ▶ Contain other than insignificant mortality risk
- ▶ Characterized by:
 - ▶ Charges assessed against the policyholder are not fixed and guaranteed.
 - ▶ Amounts credited to the policyholder are not fixed and guaranteed, or
 - ▶ Premium amount and timing may be varied without the consent of the insurer.

Universal life type contracts

- ▶ Examples:
 - ▶ Universal life insurance
 - ▶ Most US style variable deferred annuities during the accumulation phase
 - ▶ Variable universal life
 - ▶ Interest sensitive whole life

Limited-payment contracts

- ▶ Fixed and guaranteed premiums and benefits
- ▶ Premium-paying period is shorter than benefit period
- ▶ Examples:
 - ▶ 10-pay and 20-pay nonpar whole life
 - ▶ Immediate annuities involving life contingencies

Income statement presentation UL and investment contracts - example

SFAS 60 Presentation

| | |
|------------------------|--------------|
| Premium | 900 |
| + Investment income | 90 |
| - Death benefits | (25) |
| - Surrender benefits | (40) |
| - Increase in reserves | <u>(800)</u> |
| = Net income | 125 |

Income statement presentation UL and investment contracts - example

Account value rollforward

| | |
|------------------------------|-------------|
| Account value prior year | 1,000 |
| + Premium | 900 |
| - Loads | (20) |
| - AV withdrawn at death | (5) |
| - AV withdrawn at surrender | (45) |
| - Credited interest | (50) |
| - Cost of insurance charges | <u>(80)</u> |
| = Account value current year | 1,800 |

Income statement presentation UL and investment contracts - example

SFAS 97 Presentation

| | |
|--------------------------------|------|
| Investment income | 90 |
| + Loads | 20 |
| + Surrender charges | 5 |
| + Cost of insurance charges | 80 |
| - DBs in excess of AV released | (20) |
| - Credited interest | (50) |
| = Net income | 125 |

Income statement presentation UL and investment contracts - example

- ▶ If US style variable product, fees from a separate account are shown as revenue

Benefit reserves

Benefit reserves Investment contracts

- ▶ “Payments received shall be reported as liabilities and accounted for in a manner consistent with the accounting of interest-bearing, or other financial instruments.”
- ▶ For deferred annuities, this translates to reserve for basic benefit equal to account value.

Benefit reserves

Universal life contracts

- ▶ **Components:**
 - ▶ Account value
 - ▶ Unearned revenue liability for heaped front-end loads
 - ▶ Liability for persistency bonus
 - ▶ Liability for “other insurance benefit features” under SOP 03-1

Deferred policy acquisition cost

Retrospective deposit method

- ▶ Applicable to universal life and deferred annuities with significant sources of profit other than interest spread
- ▶ Deferred acquisition costs and unearned front-end loads amortized in proportion to estimated gross profits

Gross profits

Gross profits result from product margins =
Cost of insurance charges less death benefits in excess of account value released
+ Investment income earned less interest credited on account value
+ Recurring expense charge less maintenance expense
+ Surrender charges collected

Gross profits and DAC

Items to note

- ▶ Deferrable and non-deferrable acquisition expenses excluded from gross profits
- ▶ Overhead expenses excluded from gross profits
- ▶ DAC discount rate equals credited rate (option to lock in at issue or float)
- ▶ Realized capital gains included in gross profits

Example Single premium whole life with excess interest

Assumptions at issue

- ▶ Single premium = 100,000
- ▶ Deferrable expense = 3,000
- ▶ Earned rate = 10% in all years
- ▶ Credited rate = 8% in all years
- ▶ No lapse until end of 3rd year, when all lapse

Example Single premium whole life with excess interest

Assumptions at issue

- ▶ Cost of insurance charges:
 - ▶ 200 in year 1
 - ▶ 300 in year 2
 - ▶ 400 in year 3
- ▶ No assumed death benefits

Example Single premium whole life with excess interest

| <u>Year</u> | <u>Interest Spread</u> | <u>Mortality Gain</u> | <u>Gross Profit</u> | <u>Account Value</u> |
|-------------|------------------------|-----------------------|---------------------|----------------------|
| | | | | 100,000 |
| 1 | 2,000 | 200 | 2,200 | 107,800 |
| 2 | 2,156 | 300 | 2,456 | 116,124 |
| 3 | 2,322 | 400 | 2,722 | 0 |

| | |
|-----------------------|-------------------------------------|
| PV deferrable expense | 3,000 |
| PV gross profits | $6,304 = 2200v + 2456v^2 + 2722v^3$ |
| Amortization rate | 47.6% |

Example Single premium whole life with excess interest

| <u>Year</u> | <u>Deferrable Expense</u> | <u>Amortization</u> | <u>Interest</u> | <u>DAC</u> |
|-------------|-------------------------------|---------------------|-----------------|------------|
| 1 | 3,000 | (1,047) | 240 | 2,193 |
| 2 | 0 | (1,168) | 175 | 1,200 |
| 3 | 0 | (1,296) | 96 | 0 |

Assumptions

Assumptions for estimated gross profits (“EGP”)

- ▶ Assumptions needed for:
 - ▶ investment earnings
 - ▶ interest credited
 - ▶ mortality
 - ▶ termination
 - ▶ maintenance expenses

Assumptions for estimated gross profits (“EGP”)

- ▶ Assumptions must be best estimates
- ▶ Assumptions are continually unlocked
- ▶ Need to test for recoverability and loss recognition, as in FASB 60

Unlocking process

- ▶ Estimated gross profits are replaced by actual gross profits
- ▶ Future gross profits must be revised when future expectations change
- ▶ DAC recalculated from issue
- ▶ This aspect is the driver that makes FASB 97 extremely time consuming to implement

Unlocking

Example 1: Single premium whole life

- ▶ Year 2 actual earned rate = 11% versus assumed rate of 10%
- ▶ No change in year 3 expected assumptions

Unlocking

Example 1: DAC calculation

| <u>Year</u> | <u>Gross Profit</u> | <u>Original DAC</u> | <u>Original EGP</u> | <u>DAC</u> |
|---------------------|---------------------|---------------------|---------------------|------------|
| 1 | 2,200 | 2,327 | 2,200 | 2,193 |
| 2 | 3,534 | 1,046 | 2,456 | 1,200 |
| 3 | 2,722 | 0 | 2,722 | 0 |
| PV deferred expense | | 3,000 | | 3,000 |
| PV EGPs | | 7,228 | | 6,304 |
| Amortization rate | | 41.5% | | 47.6% |

Unlocking

Example 1: Reported figures

| <u>Year</u> | <u>Revised Gross Profit</u> | <u>Revised DAC</u> | <u>Original EGP</u> | <u>Original DAC</u> |
|-------------|-----------------------------|--------------------|---------------------|---------------------|
| 1 | 2,200 | 2,327 | 2,200* | 2,193* |
| 2 | 3,534* | 1,046* | 2,456 | 1,200 |

*Reported figures

Unlocking

Example 1: Net income impact in year 2

| | |
|---|----------------|
| Additional EGP | 1,078 |
| Additional amortization from replacing estimated with actual gross profit | |
| Original DAC(2) | 1,200 |
| - Revised DAC(2) | <u>(1,046)</u> |
| = Additional amortization (2) | 154 |

Unlocking

Example 2: Single premium whole life

- ▶ Year 2 actual earned rate = 11% versus assumed rate of 10% (same as example 1)
- ▶ Expected year 3 earned rate increased from 10% to 11%

Unlocking

Example 2: DAC calculation

| <u>Year</u> | <u>Gross Profit</u> | <u>Original DAC</u> | <u>Original EGP</u> | <u>DAC</u> |
|---------------------|---------------------|---------------------|---------------------|------------|
| 1 | 2,200 | 2,430 | 2,200 | 2,193 |
| 2 | 3,534 | 1,324 | 2,456 | 1,200 |
| 3 | 3,884 | 0 | 2,722 | 0 |
| PV deferred expense | | 3,000 | | 3,000 |
| PV EGPs | | 8,150 | | 6,304 |
| Amortization rate | | 36.8% | | 47.6% |

Unlocking

Example 2: Reported figures in years 1 and 2

| <u>Year</u> | <u>Original DAC</u> | <u>Example 1 Revised DAC</u> | <u>Example 2 Revised DAC</u> |
|-------------|---------------------|----------------------------------|----------------------------------|
| 1 | 2,193* | 2,327 | 2,430 |
| 2 | 1,200 | 1,046 | 1,324* |

*Reported figures

Unlocking

Example 2: Net income impact in year 2

| | |
|---|-------|
| Additional EGP | 1,078 |
| Additional amortization from replacing estimated with actual gross profits | 154 |
| Additional amortization from revising year 3 EGP | (278) |
| Total additional amortization | (124) |

Earnings patterns

Earnings patterns

- ▶ Expected pre-tax income emerges as:
 - ▶ Level % of gross profits
 - ▶ Unlocking component
 - ▶ Less (interest earned less credited) on DAC
 - ▶ Less non-deferrable acquisition and overhead expenses
 - ▶ Plus investment income on assets backing GAAP equity

Earnings patterns

| | <u>Year 1</u> | <u>Year 3</u> |
|-------------------------------------|---------------|---------------|
| GAAP book profit | 1,093 | 1,403 |
| + Investment income on DAC | 300 | 120 |
| - Interest credited on DAC | (240) | (96) |
| = Adjusted book profit | 1,153 | 1,427 |
| Gross profit | 2,200 | 2,722 |
| Adjusted book profit / gross profit | 52.4% | 52.4% |
| 1 - amortization rate | 52.4% | 52.4% |

Practical issues

DAC calculation methods

- ▶ Practically all companies use worksheets or systems instead of factors.
 - ▶ Easier to incorporate unlocking aspects of SFAS 97

Loss recognition shortcuts encountered in practice

- ▶ Create negative deferrable expense in year of loss recognition; or
- ▶ Reduce original deferrable costs so that $K < 1$ and use prior DAC process; or
- ▶ Reduce (write-down) DAC to break-even point
 - ▶ Restart amortization schedule from that point, setting initial deferrable expense = current DAC (after write-down)

Unlocking

- ▶ Frequency
- ▶ Process
- ▶ Earnings volatility

Ways to understand reserve movement

- ▶ Account value rollforward

How to understand the DAC movement

DAC prior year
+ New deferrals
- Amortization (split into normal, retrospective unlocking,
prospective unlocking, balancing item)
+ Interest
= DAC current year

Other worthwhile analyses

- ▶ Expected versus actual gross profits (stripping out current year's issues), element by element
- ▶ Expected gross profit next year
 - ▶ this year's model (stripping out current year's issues) versus
 - ▶ last year's model (using similar assumption set)

SOP 03-1 and SFAS 133

Major items covered in SOP 03-1

- ▶ Reserves for products with more than one account value
- ▶ Reserves for GMDB in VA, UL, VUL
- ▶ Reserves for annuitization guarantees (e.g., GMIB, guaranteed settlement options, 2 tiered annuities)
- ▶ Reserves for other “gains followed by losses”
- ▶ Reserves and assets for sales inducements (including persistency bonuses)

SOP 03-1 Mechanics for GMDB reserves

- ▶ Multiple scenario computation
- ▶ $k = \text{PV Benefits (in excess of AV)} / \text{PV Assessments}$
- ▶ $\text{Reserve (t)} = \text{Reserve (t-1)} + \text{Interest} + k * \text{Assessment (t)} - \text{Benefits (t)}$
- ▶ Retrospective unlocking
- ▶ Must reflect GMDB items in DAC unlocking

SFAS 133

- ▶ SFAS 133 covers derivatives, including embedded derivatives
- ▶ Guaranteed account value and many withdrawal provisions in variable annuities are examples of embedded derivatives that must be fair valued
- ▶ Fair value methodology must be in compliance with SFAS 157