



SOCIETY OF ACTUARIES

**US GAAP for International Life Insurers – Hong Kong
June 2008**

Session 6: Participating Contracts – SOP 95-1

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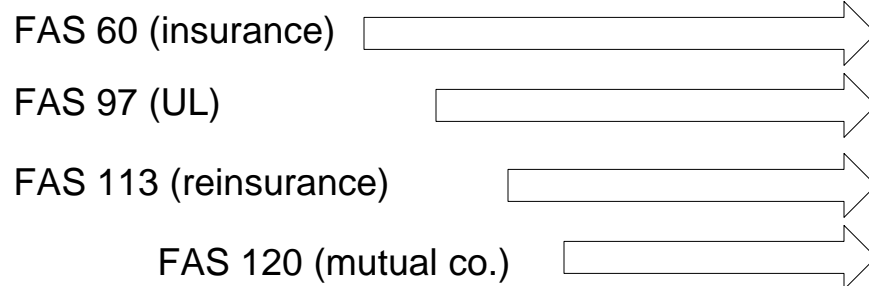
Participating Policies

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Evolution of US GAAP



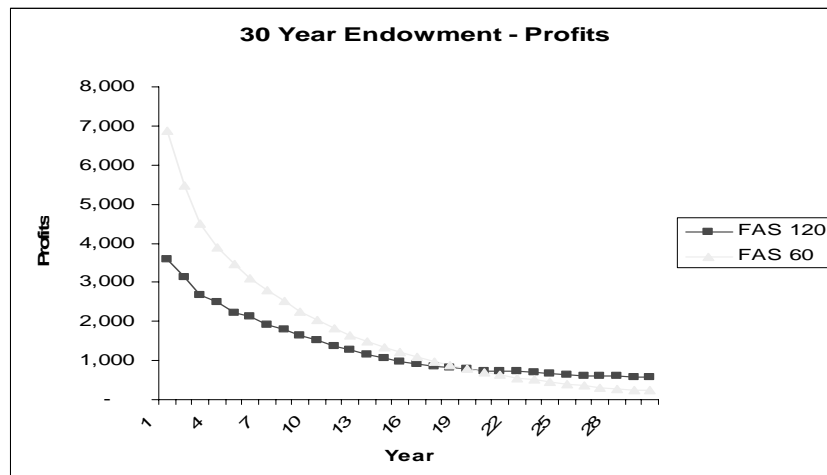
1960 1970 1980 1990 2000 2010



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FAS 120 and SOP 95-1

- Required for Mutual Insurance Companies
- Alternative to FAS 60 for Participating Contracts issued by Stock Companies



FAS 120 and SOP 95-1 The Best of All Worlds!

- Traditional Income Statement Presentation
 - Premiums as Income (like FAS 60)
- Net Level Premium (NLP) Benefit Reserve
 - Interest and Mortality Assumptions only
- DAC amortized like under FAS 97
- Ended uncertainty of GAAP for Mutuals



FAS 120 / SOP 95-1 Policy Requirements

- Long-duration par contract expected to pay dividends based on actual experience

- Use contribution principle to determine dividends (stock companies)



FAS 120 Benefit Reserves

1. NLP reserve for death and endowment benefits = proxy account value
2. Liability for terminal dividends (accrued like DAC)
3. Deficiency Reserves (if any)



FAS 120 NLP Reserve

- Net Level Premium (without Zilmer)
- Statutory Mortality
- Interest Rate - hierarchy
 - Dividend Fund
 - Guaranteed
 - Non forfeiture
 - NAIC



FAS 120 DAC

- Retrospective Deposit Method
 - Same as FAS 97
- Amortized using Expected Gross Margins
 - EGM similar to FAS 97 EGP
 - EGM is a Residual amount after bonuses, but before Acquisition Cost accrual



Gross Margins

- + Premiums
- + Investment Income (including realized gains)
- Benefits (death, surrender, endowment)
- Reserve Increase
- Administrative Expenses
- Policyholder Dividends Paid/Credited



FAS 120 Example: EGM

Year	Premium	Interest	Benefits	Reserve	Expenses	Bonus	EGM
1	1,190,072	(2,330)	(169,746)	(638,230)	(41,448)	-	338,319
2	944,864	47,587	(261,270)	(406,186)	(20,532)	(13,227)	291,237
3	776,337	65,875	(240,462)	(317,141)	(16,874)	(22,378)	245,356
4	670,030	80,641	(222,908)	(271,669)	(14,581)	(29,603)	211,910
5	592,215	92,953	(229,858)	(224,722)	(12,915)	(35,741)	181,932
6	529,320	104,014	(228,251)	(194,126)	(11,569)	(40,778)	158,610
7	475,854	112,418	(245,176)	(151,900)	(10,429)	(45,097)	135,670
8	427,732	118,859	(258,020)	(115,125)	(9,401)	(48,464)	115,581
9	384,417	123,574	(267,335)	(83,313)	(8,473)	(51,009)	97,860
10	363,897	134,267	(2,736,068)	2,402,410	(8,005)	(52,848)	103,654



FAS 120 DAC

- $DAC_{t+1} = (DAC_t + C_t) * (1+i) - k * EGM_t$
- GM = Gross Margin
- C = Deferrable Cost
- i = Discount Rate: either
 - Set at issue
 - Dynamic
- $k = pv(\text{Acquisition Cost}) / pv(\text{EGM})$ at issue
 - k varies as actual experience emerges



FAS 120 Example: DAC

Year	Prior DAC	Commission	Interest	k	EGM	End DAC
1	0	1,071,065	55,695	93%	338,187	812,843
2	812,843	94,486	47,181	93%	291,594	683,841
3	683,841	77,634	39,597	93%	245,476	573,211
4	573,211	67,003	33,291	93%	211,952	476,763
5	476,763	59,221	27,871	93%	181,946	394,967
6	394,967	26,466	21,915	93%	158,616	296,114
7	296,114	23,793	16,635	93%	135,671	210,607
8	210,607	21,387	12,064	93%	115,582	136,770
9	136,770	19,221	8,112	93%	97,860	73,265
10	73,265	18,195	4,756	93%	103,654	0



Contribution Principle

- Annual policyholder dividends are paid in a manner that identifies divisible surplus and distributes that surplus in approximately the same proportion as the contracts are considered to have contributed to divisible surplus



A Little Mathematics

Fackler Accumulation

$$({}_tV_x + P)(1+i) = (1 - q_{x+t})({}_{t+1}V_x) + q_{x+t}$$



More Realistic Roll Forward

$$({}_tV_x + GP)(1+i') =$$

$$(1 - q'_{x+t})({}_{t+1}V_x) + q'_{x+t} + e_t + \text{bonus}_t + \text{EGM}_t$$

where i' denotes actual experience and e_t / b_t represent expense / bonus



Contribution Principle

$$\text{bonus}_t + \text{EGM}_t =$$

$$\begin{aligned} & [(\text{GP}-\text{P})(1+i') - e_t] && \text{expense} \\ & + (V_x + \text{P})(i'-i) + && \text{interest} \\ & + (q_{x+t} - q'_{x+t})(1 - {}_{t+1}V_x) && \text{mortality} \end{aligned}$$



Comparison

	<u>FAS 60</u>	<u>FAS 97</u>	<u>FAS 120</u>
Reserve	natural	account	NLP
DAC amortization	premium	EGP	EGM
Discount rate	yield	credit	guarantee
Presentation	premium	deposit	premium
Mutual Co.	short term	UL	participating
Stock (Par Product)	permitted	possible?	possible?

