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Secondary Guarantee – Need, Features & Reserving

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PART I - SECONDARY GUARANTEES & METHODS OF ESTIMATION

PART II - RESERVES FOR SECONDARY GUARANTEES

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AGENDA FOR PART I

- WHAT IS SECONDARY GUARANTEE ?
- EFFECT OF STOCK MOVEMENT ON LAPSE OF UL POLICIES
- WHY DO WE NEED SECONDARY GUARANTEE ?
- METHODS TO ESTIMATE SECONDARY GUARANTEE
- CONSUMER'S AND INSURER'S PERSPECTIVE

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What is Secondary Guarantee ?

It is a Guarantee provided by Insurance Company to keep the policy in force for a set year or to a certain age if the premium is paid in an amount equal to or greater than required payment for each interval. Hence Policyholder is not affected even if account value of the policy is negative, unless he is paying minimum premium specified while insurer is not worried of increase in lapse rates due to change in economic scenario.

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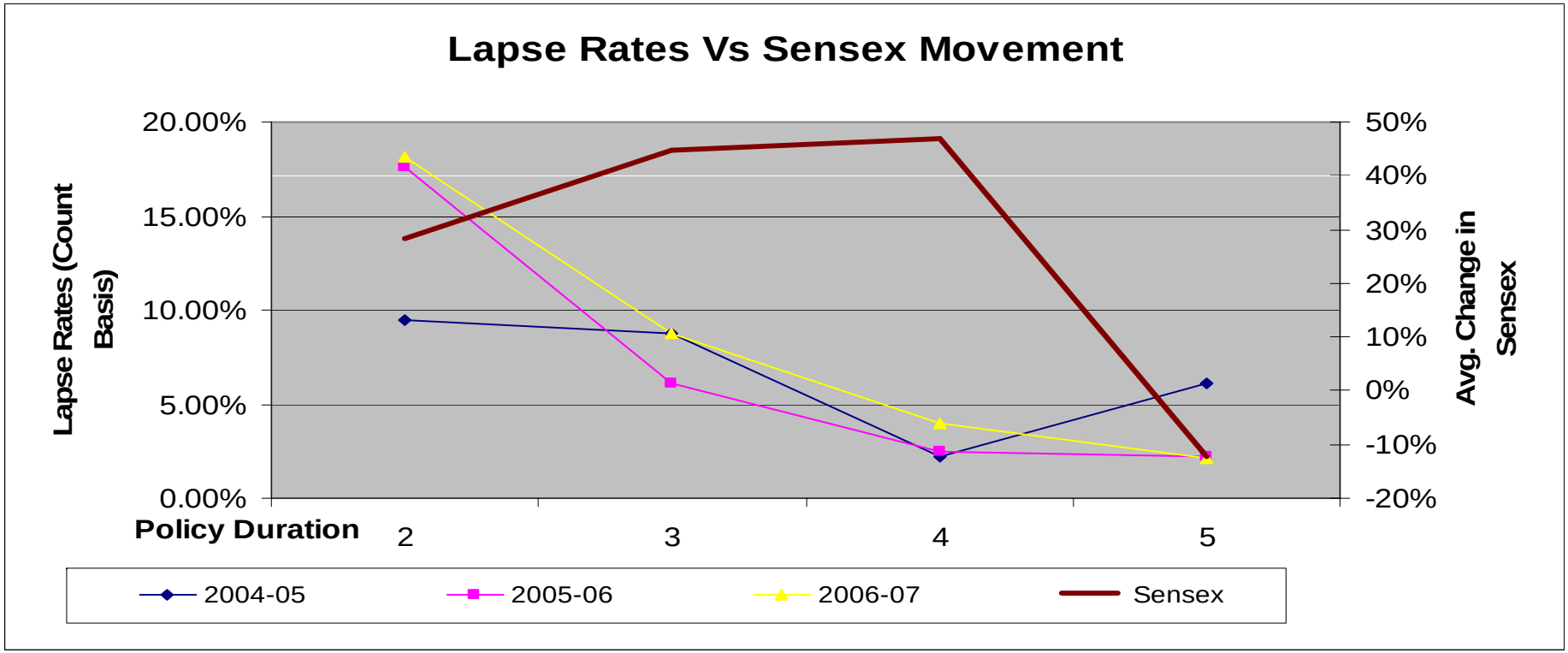
Relationship between Lapse Rates and Stock Movement

- ULIP PROVIDES REAL RETURNS AS PART OF INVESTMENT IN EQUITY
- POLICYHOLDERS EXPECT HIGH RETURN ON HIGHER PORTION OF EQUITY
- ULIPs SOLD MORE AS INVESTMENT VEHICLE THAN LIFE ASSURANCE IN INDIAN MARKET
- STOCK MOVEMENTS AFFECTING RETURNS, HAVE AFFECTED LAPSES



Ref : LAPSATION AND ITS IMPACT ON INDIAN LIFE INSURANCE INDUSTRY from IRDA website

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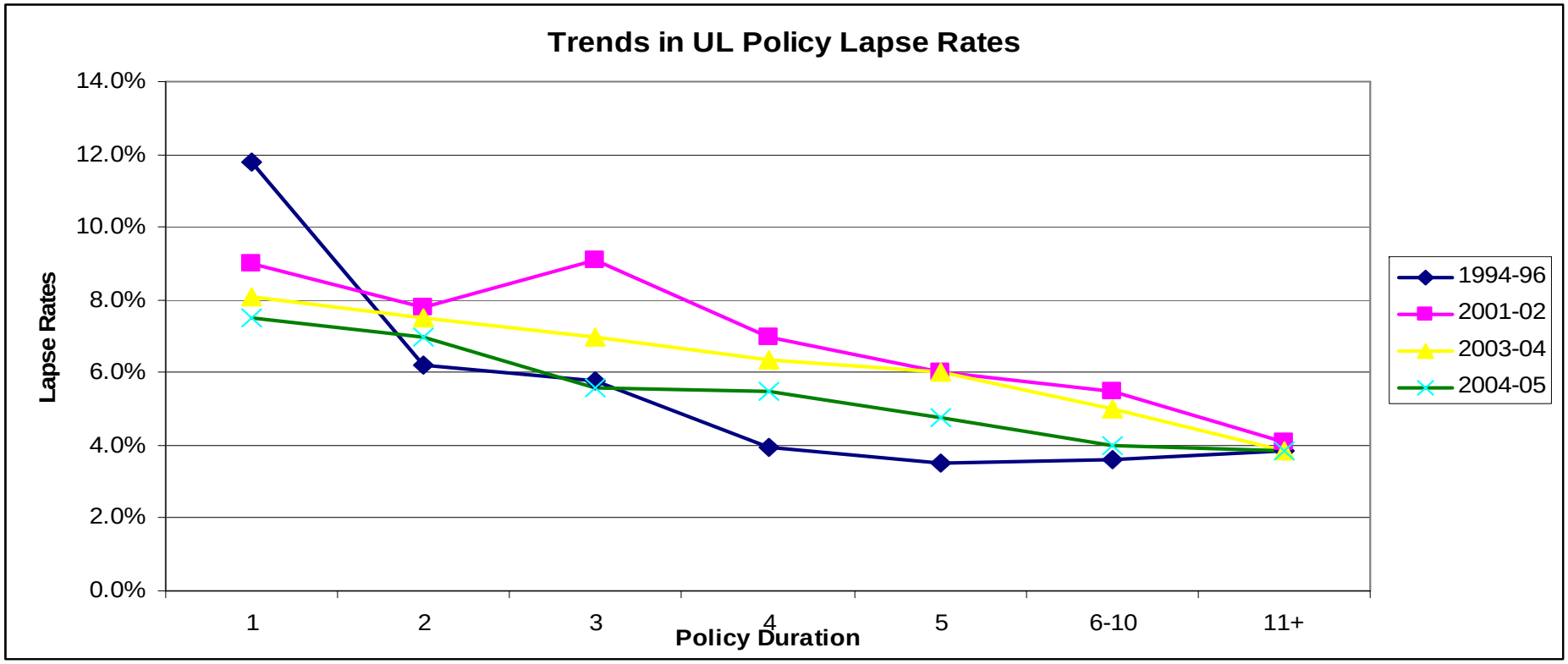
Why Secondary Guarantee?

- ULIP POLICY CAN LAPSE ONCE THE ACCOUNT VALUE FALLS DUE TO FALLING MARKET
- DUE TO LOW ACCOUNT VALUE, COI AND OTHER CHARGES NOT MET BY ACCOUNT VALUE
- SECONDARY GUARANTEES PROVIDE PROTECTION AGAINST THIS RISK OF POTENTIAL LAPSE



Ref : 2004-05 US Individual Life Persistency Report from SOA (web link: http://www.soa.org/research/individual-life/2004-2005-ind-life-persistency.aspx)

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Two Methods to Estimate Secondary Guarantee

SHADOW ACCOUNTING METHOD

- SEPARATE ACCOUNT FOR EACH POLICY- CALLED SHADOW ACCOUNT
- HAS UNIQUE CREDIT RATES, COI CHARGES AND OTHER LOADS; DIFFERENT FROM POLICY RATES
- POLICY DOES NOT LAPSE IF SHADOW ACCOUNT IS POSITIVE

STIPULATED PREMIUM METHOD

- INSURES AGAINST LAPSE SO LONG AS MIN. STIPULATED PREM PAID
- STIPULATED PREM COVERS BASIC BENEFITS AND EXPENSES
- POLICYHOLDERS CAN PAY STIPULATED PREM IN LUMPSUM

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Consumer's and Insurer's Perspective of Secondary Guarantee

CONSUMER'S PERSPECTIVE	INSURER'S PERSPECTIVE
REQUIRED FOR LIFE POLICIES SOLD WITH UNREALISTIC DIVIDEND PROJECTIONS	LOWER LAPSES LEAD TO HIGHER PROFITABLITY AND CREDITIBILITY
ASSURES LONG TERM DEATH BENEFIT GUARANTEES WHERE CASH VALUE IS OF LITTLE IMPORTANCE	NEW FEATURE ADDED GIVES A MARKETING ADVANTAGE
NON-PAYMENT OF MIN. PREM LEAD TO NON-RECOVERABLE SECONDARY GUARANTEE OR CATCH UP PREM TOO HIGH	FOR SECONDARY GUARANTEES, INSURERS NEED TO MAINTAIN PRUDENT RESERVES

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AGENDA FOR PART II

XXX RESERVING METHODOLGY & SAMPLE CALCULATION

AXXX RESERVING METHODOLGY & SAMPLE CALCULATION

EFFECTS OF XXX and AXXX RESERVING

INSURER'S PERSPECTIVE

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XXX RESERVE FORMULA

XXX RESERVES EQUAL TO GREATER OF:

a) RESERVE UNDER SEGMENT VALUATION METHOD (SEGMENTED RESERVE)

b) RESERVE FOR EACH POLICY AS A DIFFERENT SEGMENT (UNITARY RESERVE)

XXX RESERVES = MAX(SEGMENTED RESERVES, UNITARY RESERVES)

STEPS IN ESTIMATING XXX RESERVES

STEP 1 - SEGMENT CLASSIFICATION CRITERION

STEP 2 - CALCULATION OF SEGMENTED RESERVES

STEP 3 - CALCULATION OF UNITARY RESERVES

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SEGMENT CLASSIFICATION CRITERION

SEGMENTS ARE CREATED BY COMPARING THE INCREASE IN DESIGANATED PREMIUM AND VALUATION MORTALITY FOR A PARTICULAR POLICY OVER ITS DURATION

NEW SEGMENT CREATED WHEN:

RATIO OF SUCCESSIVE DESIGNATED PREMIUMS > **RATIO OF SUCCESSIVE VALUATION MORTALITY RATES**

Designated Premiums = Sum of Admin. and COI charges for the current year at 1000^{th} Face Value

SEGMENTATION ASSUMES A LAPSE RATE OF 100% AT THE END OF EACH SEGMENT. ENSURES SUFFICIENT RESERVES FOR NON-LEVEL PREMIUM NON-LEVEL BENEFIT POLICIES

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XXX RESERVE - SEGMENTATION METHODOLOGY

Face	1,000,000					
Duration	Attained Age	Minimum Premium (MP)	% change in MP	Minimum Valuation Mortality	% change in Val.Mortality	Segment
0	50	787.36		0.00063		1
1	51	929.78	118%	0.00079	125%	1
2	52	1,077.72	116%	0.00093	118%	1
3	53	1,215.84	113%	0.00106	114%	1
4	54	1,386.14	114%	0.00122	115%	1
5	55	1,571.50	113%	0.00140	115%	1
6	56	1,804.91	115%	0.00163	116%	1
7	57	2,044.28	113%	0.00186	114%	1
8	58	2,289.59	112%	0.00211	113%	1
9	59	2,532.47	111%	0.00235	111%	1
10	60	6,643.53	262%	0.00266	113%	2
11	61	11,889.51	179%	0.00307	115%	3
12	62	13,327.63	112%	0.00342	112%	3
13	63	14,377.02	108%	0.00374	109%	3
14	64	15,509.01	108%	0.00410	110%	3
15	65	16,729.91	108%	0.00458	112%	3
16	66	18,046.63	108%	0.00515	112%	3
17	67	19,466.49	108%	0.00580	113%	3
18	68	20,997.43	108%	0.00647	112%	3
19	69	22,647.96	108%	0.00714	110%	3
20	70	24,427.07	108%	0.00800	112%	3

XXX RESERVE - CALCULATION OF SEGMENTED RESERVES

CALCULATE PVFDB and PVFGP FOR EACH SEGMENT

K FOR EACH SEGMENT = PVFDB OF THE SEGMENT \ PVFGP OF THE SEGMENT

NP FOR EACH SEGMENT = GROSS PREMIUM * K (OF THE SAME SEGMENT)

TERMINAL SEGMENT RESERVES=PVFDB-PVFNP

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XXX RESERVE - UNITARY RESERVES CALCULATION

CALCULATE PVFDB and PVFGP OF THE WHOLE DURATION

K FOR WHOLE DURATION = TOTAL PVFDB \ TOTAL PVFGP

CALCULATE PVFNP WHERE NET PREMIUM= K * GROSS PREMIUM

UNITARY RESERVES = PVFDB - PVFNP

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XXX RESERVE - SAMPLE CALCULATION

Segment	PVFGP	PVFDB	K	PVFNP
1	10.65	17.08	1.6429	17.492
2	3.76	2.40	0.6391	2.403
3	237.98	180.05	0.7566	180.049

PVFGP	PVFDB	K	PVFNP	XXX BASIC RATE
220.460	175.230	0.7948	232.580	0.04

	SEGMENTED RESERVES						UNITARY RESERVES					
POL YR	PVFGP	PVFDB	NP	PVFNP	SEGMENTED TERMINAL RESERVES	SEGM-ENTS	PVFGP	PVFDB	NP	PVFNP	Unitary Basic Terminal Reserve	XXX Basic Reserve
0	0.787	1.706	1.706	1.706	0.000	1	0.787	1.706	1.706	1.706	0.00	0.00
1	0.875	1.753	1.528	1.437	0.000	1	0.875	1.753	0.739	0.695	0.00	0.00
2	0.953	1.796	1.771	1.566	0.000	1	0.953	1.796	0.857	0.758	0.00	0.00
3	1.012	1.779	1.998	1.662	0.000	1	1.012	1.779	0.966	0.804	0.00	0.00
4	1.084	1.787	2.277	1.781	0.000	1	1.084	1.787	1.102	0.862	0.00	0.00
5	1.156	1.810	2.582	1.899	0.000	1	1.156	1.810	1.249	0.919	0.00	0.00
6	1.260	1.869	2.965	2.071	0.000	1	1.260	1.869	1.435	1.002	0.00	0.00
7	1.355	1.976	3.359	2.226	0.000	1	1.355	1.976	1.625	1.077	0.00	0.00
8	1.440	2.085	3.762	2.366	0.000	1	1.440	2.085	1.820	1.145	0.00	0.00
9	1.511	2.224	4.161	2.483	0.000	1	1.511	2.224	2.013	1.201	0.00	0.00
10	3.760	2.403	4.246	2.403	0.000	2	3.760	2.403	5.281	2.989	0.00	0.00
11	6.378	2.567	8.995	4.825	0.000	3	6.378	2.567	9.450	5.070	0.00	0.00
12	6.773	2.731	10.083	5.124	4.444	3	6.773	2.731	10.594	5.383	0.00	4.44
13	6.916	2.835	10.877	5.233	9.669	3	6.916	2.835	11.428	5.498	0.00	9.67
14	7.060	2.964	11.734	5.341	15.485	3	7.060	2.964	12.327	5.611	0.00	15.49
15	7.201	3.081	12.657	5.448	21.898	3	7.201	3.081	13.298	5.724	3.14	21.90
16	7.340	3.235	13.653	5.554	28.992	3	7.340	3.235	14.344	5.835	9.82	28.99
17	7.476	3.427	14.728	5.656	36.743	3	7.476	3.427	15.473	5.942	17.17	36.74
18	7.607	3.627	15.886	5.755	45.106	3	7.607	3.627	16.690	6.046	25.15	45.11

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AXXX RESERVE - METHODOLGY

CALCULATE BASIC & DEFICIENCY RESERVES

DETERMINE ACTUAL PREMIUM IN EXCESS OF MINIMUM PREMIUM

CALCULATE SINGLE PAYMENT TO FUND SHADOW GUARANTEE FOR PERIOD REMAINING

CALCULATE R = EXCESS PAYMENTS FROM STEP 2 / SINGLE PAYMENT FROM STEP 3

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AXXX RESERVE - METHODOLGY

DETERMINE NET ADDITIONAL PREMIUM = R * (NET SINGLE PREMIUM – (BASIC + DEF. RESERVES))

FINAL DEFICIENCY RESERVES = (1-R) * INITIAL DEFICIENCY RESERVES

FINAL TOTAL RESERVES1 = MIN (NSP, BASIC RESERVES+ DEF. RESERVES + ADD. PREMIUM – SURRENDER CHARGES)

FINAL TOTAL RESERVES2 = MAX (FINAL TOTAL RESERVES1, BASIC RESERVES + DEF. RESERVES, CRVM RESERVES)

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AXXX RESERVE - SAMPLE CALCULATION

		STEP 1		STEP 2	STEP 3	STEP 4		STEP 5	STEP 6	STEP 7	STEP 8
Pol yr	Designated premiums	Basic Reserves	Def reserves	Excess	Single payment	Ratio	Net Single Premium	Net add prem	Red Def Res	Actual Reserves	Increased Basic Reserve
0	0.79	-	0	32.67	25124	0.0013	19780	25.72	0	25.72	25.72
1	0.93	-	0	523.52	54230	0.0097	35230	340.10	0	340.10	340.10
2	1.08	-	0	252.36	83336	0.0030	50680	153.47	0	153.47	153.47
3	1.22	-	0	117.52	112442	0.0010	66130	69.12	0	69.12	69.12
4	1.39	-	0	825.63	141548	0.0058	81580	475.84	0	475.84	475.84
5	1.57	-	0	1015.23	170654	0.0059	97030	577.24	0	577.24	577.24
6	1.80	-	0	1204.83	199760	0.0060	112480	678.41	0	678.41	678.41
7	2.04	-	0	1394.43	228866	0.0061	127930	779.45	0	779.45	779.45
8	2.29	-	0	1584.03	257972	0.0061	143380	880.40	0	880.40	880.40
9	2.53	-	0	1773.63	287078	0.0062	158830	981.29	0	981.29	981.29
10	6.64	-	0	1963.23	316184	0.0062	174280	1082.13	0	1082.13	1082.13
11	11.89	0.00	0	2152.83	345290	0.0062	189730	1182.94	0	1182.94	1182.94
12	13.33	4.44	0	2342.43	374396	0.0063	205180	1283.69	0	1288.14	1288.14
13	14.38	9.67	0	2532.03	403502	0.0063	220630	1384.42	0	1394.09	1394.09
14	15.51	15.49	0	2721.63	432608	0.0063	236080	1485.13	0	1500.62	1500.62
15	16.73	21.90	0	2911.23	461714	0.0063	251530	1585.83	0	1607.72	1607.72
16	18.05	28.99	0	3100.83	490820	0.0063	266980	1686.50	0	1715.50	1715.50
17	19.47	36.74	0	3290.43	519926	0.0063	282430	1787.17	0	1823.91	1823.91
18	21.00	45.11	0	3480.03	549032	0.0063	297880	1887.82	0	1932.93	1932.93

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Effects of XXX and AXXX Reserves

RESERVE SUFFICIENTLY \ DISCOURAGE CHARGE OF EXCESS PREMIUM

- **FOLLOWING IS AN EXAMPLE TO SHOW INEFFECT OF EXCESS PREMIUMS**
  - **TABLE 1 SHOW CALC OF NP & ITS PV IN GIVEN SCENARIO**
  - **TABLE 2 SHOWS CALC OF NP AND ITS PV IN SCENARIO OF EXCESS PREM**
  - **PVFNP IS SAME IN BOTH TABLES**

GP	PV factor	mort	PVFGP	PVFDB	K	NP	PVFNP	Segment
20	1	0.5	20	15	0.57	11.37	11.37	1
30	0.9	0.6	27	18	0.57	17.05	15.35	1
60	0.8	0.7	48	21	0.57	34.11	27.28	1
70	0.7	0.8	49	24	0.49	34.29	24.00	2

TABLE 1
TOTAL PVFNP
SEGMENT 1
$54

GP	PV factor	mort	PVFGP	PVFDB	K	NP	PVFNP	Segment
20	1	0.5	20	15	0.55	10.91	10.91	1
30	0.9	0.6	27	18	0.55	16.36	14.73	1
65	0.8	0.7	52	21	0.55	35.45	28.36	1
70	0.7	0.8	49	24	0.49	34.29	24.00	2

TABLE 2
TOTAL PVFNP
SEGMENT 1
$54

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XXX and AXXX Reserving- Insurer's Perspective

POINTS OF DISCUSSION

THE TWO METHODS REQUIRE ADDITIONAL CAPITAL IN EXCESS OF UNITARY RESERVES

ADDITIONAL CAPITAL MET BY REINSURANCE, SURPLUS NOTES AND SECURITISATION

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Conclusion

- Paper aimed at explaining the features and advantages of secondary guarantees
- We have tried to give idea on the reserving for these features
- The purpose was to bring forward to the life insurers
  - The new sophisticated guarantees that can be offered as part of the unit linked product
  - The reserve requirements that can be followed to maintain the solvency of the company.

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