Life Insurance as an Asset Class:

A Value-Added Component of an Asset Allocation

Ethical Edge Insurance Solutions, LLC

Analytical Tools for Life Insurance

Richard M. Weber, MBA, CLU

Christopher Hause, FSA, MAAA

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- Permanent life insurance may be considered as any other major asset class and both acquired and managed according to an asset allocation for long-term value and maximization of benefits. In fact, consumers may wish to consider paying premiums from portfolio resources rather than from income resources.

- After determining the uses for lifetime insurance protection, permanent life insurance can optimize the risk/reward profile of an investment portfolio. That is, a portfolio with both fixed and equity components that includes life insurance intended for a lifetime may deliver greater legacy *and* living values in conjunction with the investment portfolio – for a given risk tolerance and reward goal – than the portfolio without the intended life insurance.

- Large amounts of life insurance should be purchased on the basis of risk and reward considerations and optimized for the purpose of creating an efficient result.

- When non-guaranteed investment performance is a key component of the policy, and the policyholder is accepting much or all of that risk, realistic expectations can only reasonably be formed by using statistically appropriate methods of calculating policy illustrations. Ongoing review will be an essential aspect of managing such policies to achieve policy owner expectations.

Life insurance is generally purchased to protect the financial well being of those who are dependent on the insured (families and businesses) in the event of premature death – either to replace income, create an estate, or provide liquidity for an estate. It is purchased to endow universities and museums and churches. It is also purchased to better assure the financial stability of pension and post-retirement health plans.

Life insurance is both a formidable economic presence and one of the most complex financial tools consumers must consider as they pursue financial well being and family or business responsibility. It is the intention of this discussion to look at life insurance objectively from the standpoint of the consumer and his/her needs in today's world, and to promote a clearer understanding of which life insurance choices may prove most suitable in a variety of circumstances. Ultimately, the use of life insurance will be best appreciated (and accepted by the client's other advisors) when it can be discussed in the context and vocabulary for which consumers already manage their investment portfolios.

Human Life Value, on the other hand, does not take into account the current and future living costs of the survivors. It values the economic life of the decedent and is similar to the mathematical formulas used to calculate and claim damages under a wrongful death lawsuit. In a lawsuit claiming HLV for damages, the theory is that the family – irrevocably denied the flesh and blood mother/father and spouse – is entitled at least to the economic value of the deceased for all that he or she would have produced and accumulated in his or her lifetime.

Recall that the 33-year-old currently earning $100,000 may have a calculated gross capital need (prior to offsets for existing assets and resources) for $4.2 million to cover the children's and spouse's future living expenses. Applying common HLV factors (assuming the 33-year-old would have worked until age 70 and received annual 5% raises), the result might amount to as much as $10 million *earnings potential* (not discounted for the time value of money) as the basis for calculating the life insurance need. Existing assets aren't included in the calculation of HLV, nor is the potential for the surviving spouse's future income or remarriage.

Regardless of the technical approach to calculating the appropriate amount of life insurance, current statistics reveal an enormous gap between needs and reality. A recent study conducted by LIMRA International tells a different story about the amount of life insurance in force in the U.S. Key within the data was that 22% of families with dependent children expect to have immediate trouble meeting everyday living expenses at the breadwinner's death. 28% of wives – and 15% of husbands – have no life insurance at all. Those who do have insurance own an average of just $235,000 – enough to replace their income for only 4.2 years. The typical married couple would need to double its current coverage to meet experts' *minimum* recommendations of having enough life insurance to replace income for 7 to 10 years.[6]

From these statistics, the yearly probabilities of death can be used to create a hypothetical "premium" for life insurance as seen in **Table 2.** That is, an insurance company insuring these 1 million individuals for $1 million each (with a total exposure of $1 trillion) has an expectation of paying a total of $270 million in death claims *this* year. In order to cover at least that cost (again, not yet including expenses or profits), the insurer must collect at least $270 from each insured individual.

If the answer to "what does life insurance cost?" takes into account the timeframe from acquisition to life expectancy, **Table 2** also shows that an individual in this group surviving at least to the group's life expectancy will have paid $690,820 (approximately 70% of the insured death benefit) in total hypothetical premiums in order to be assured that his beneficiary will receive $1 million in death benefits, regardless of when death does occur. This will likely be perceived as a "good deal" if death occurs prematurely, and a "poor deal" if death occurs after life expectancy.

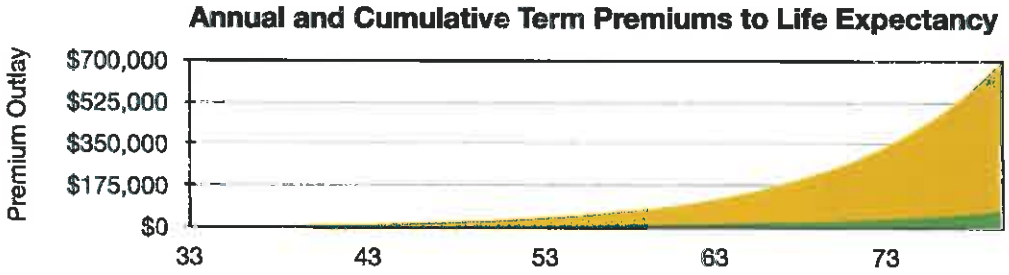


Table 3 demonstrates that a now 43-year-old who deferred purchasing life insurance for 10 years will pay somewhat more in cumulative premiums to life expectancy than the amount paid if the policy had been acquired at age 33. Similarly, in 10-year increments, we can look at the lifetime cost of providing insurance to an individual who doesn't acquire insurance until age 53 (98% of the amount paid by a 33-year-old), age 63 (100%) and age 73 (108%). Certainly between acquisition ages 33 and 53, it is noteworthy that the cumulative cash outlay for insurance to life expectancy is relatively close, and outlays beyond life expectancy are dramatic.

This accounting of cumulative hypothetical premiums to life expectancy has not yet been adjusted for the time value of money. The net present value (NPV) of these hypothetical "premiums" for lifetime coverage (measured by life expectancy) is once again relatively close, but it would be possible to infer from **Table 4** that – if the focus were purely on premium

2001 Valuation Basic Table

Table 1 - Group of 1 million 33-year old healthy males

Life Expectancy

Age	Probability of death THIS year	Hypothetical deaths THIS year	Remaining lives
33	0.027%	270	999,730
34	0.038%	380	999,350
35	0.048%	480	998,870
36	0.058%	579	998,291
37	0.067%	669	997,622
38	0.076%	758	996,864
39	0.085%	847	996,017
40	0.091%	906	995,110
41	0.098%	975	994,135
42	0.107%	1,064	993,071
43	0.121%	1,202	991,870
44	0.142%	1,408	990,461
45	0.168%	1,664	988,797
46	0.192%	1,898	986,899
47	0.214%	2,112	984,787
48	0.234%	2,304	982,482
49	0.253%	2,486	979,997
50	0.273%	2,675	977,321
51	0.295%	2,883	974,438
52	0.323%	3,147	971,291
53	0.363%	3,526	967,765
54	0.404%	3,910	963,855
55	0.450%	4,337	959,518
56	0.504%	4,836	954,682
57	0.562%	5,365	949,317
58	0.641%	6,085	943,232
59	0.702%	6,621	936,610
60	0.776%	7,268	929,342
61	0.867%	8,057	921,285
62	0.980%	9,029	912,256
63	1.107%	10,099	902,157
64	1.240%	11,187	890,971
65	1.380%	12,295	878,675
66	1.521%	13,365	865,311
67	1.663%	14,390	850,920
68	1.816%	15,453	835,468
69	1.973%	16,484	818,984
70	2.165%	17,731	801,253
71	2.380%	19,070	782,183

Table 2 - Group of 1 million 33-year old healthy males

"Premium"

Age	Probability of death THIS year	Hypothetical premium THIS year	Cumulative premium
33	0.027%	$ 270	270
34	0.038%	$ 380	650
35	0.048%	$ 480	1,130
36	0.058%	$ 580	1,710
37	0.067%	$ 670	2,380
38	0.076%	$ 760	3,140
39	0.085%	$ 850	3,990
40	0.091%	$ 910	4,900
41	0.098%	$ 980	5,880
42	0.107%	$ 1,070	6,950
43	0.121%	$ 1,210	8,160
44	0.142%	$ 1,420	9,580
45	0.168%	$ 1,680	11,260
46	0.192%	$ 1,920	13,180
47	0.214%	$ 2,140	15,320
48	0.234%	$ 2,340	17,660
49	0.253%	$ 2,530	20,190
50	0.273%	$ 2,730	22,920
51	0.295%	$ 2,950	25,870
52	0.323%	$ 3,230	29,100
53	0.363%	$ 3,630	32,730
54	0.404%	$ 4,040	36,770
55	0.450%	$ 4,500	41,270
56	0.504%	$ 5,040	46,310
57	0.562%	$ 5,620	51,930
58	0.641%	$ 6,410	58,340
59	0.702%	$ 7,020	65,360
60	0.776%	$ 7,760	73,120
61	0.867%	$ 8,670	81,790
62	0.980%	$ 9,800	91,590
63	1.107%	$ 11,070	102,660
64	1.240%	$ 12,400	115,060
65	1.380%	$ 13,800	128,860
66	1.521%	$ 15,210	144,070
67	1.663%	$ 16,630	160,700
68	1.816%	$ 18,160	178,860
69	1.973%	$ 19,730	198,590
70	2.165%	$ 21,650	220,240
71	2.380%	$ 23,800	244,040

Table 3 - Group of 1 million 33-year old healthy males

Comparison of Cumulative Premiums for different start dates

Life Expectancy

Age	Non-Smoker Male Age 33 Cum Prem	Non-Smoker Male Age 43 Cum Prem	Non-Smoker Male Age 53 Cum Prem	Non-Smoker Male Age 63 Cum Prem	Non-Smoker Male Age 73 Cum Prem
33	$ 270				
34	$ 650				
35	$ 1,130				
36	$ 1,710				
37	$ 2,380				
38	$ 3,140				
39	$ 3,990				
40	$ 4,900				
41	$ 5,880				
42	$ 6,950				
43	$ 8,160	$ 510			
44	$ 9,580	$ 1,240			
45	$ 11,260	$ 2,190			
46	$ 13,180	$ 3,330			
47	$ 15,320	$ 4,680			
48	$ 17,660	$ 6,270			
49	$ 20,190	$ 8,140			
50	$ 22,920	$ 10,280			
51	$ 25,870	$ 12,720			
52	$ 29,100	$ 15,480			
53	$ 32,730	$ 18,610	$ 1,110		
54	$ 36,770	$ 22,170	$ 2,720		
55	$ 41,270	$ 26,250	$ 4,790		
56	$ 46,310	$ 30,870	$ 7,310		
57	$ 51,930	$ 36,020	$ 10,250		
58	$ 58,340	$ 41,630	$ 13,680		
59	$ 65,360	$ 47,910	$ 17,770		
60	$ 73,120	$ 54,940	$ 22,700		
61	$ 81,790	$ 62,840	$ 28,560		
62	$ 91,590	$ 71,730	$ 35,660		
63	$ 102,660	$ 81,790	$ 44,280	$ 2,300	
64	$ 115,060	$ 93,090	$ 54,570	$ 5,720	
65	$ 128,860	$ 105,680	$ 65,880	$ 10,460	
66	$ 144,070	$ 119,480	$ 78,330	$ 16,690	
67	$ 160,700	$ 134,700	$ 92,140	$ 24,550	
68	$ 178,860	$ 152,860	$ 107,390	$ 34,070	
69	$ 198,590	$ 172,590	$ 124,440	$ 45,160	
70	$ 220,240	$ 194,240	$ 143,720	$ 57,720	
71	$ 244,040	$ 218,040	$ 165,400	$ 71,790	
72	$ 270,720	$ 244,720	$ 190,230	$ 88,860	
73	$ 300,420	$ 274,420	$ 218,220	$ 109,330	$ 7,760
74	$ 333,280	$ 307,280	$ 249,590	$ 133,600	$ 19,330
75	$ 369,600	$ 343,600	$ 284,710	$ 162,220	$ 34,310
76	$ 409,680	$ 383,680	$ 324,090	$ 195,920	$ 52,340
77	$ 454,150	$ 428,150	$ 367,970	$ 235,500	$ 73,220
78	$ 503,760	$ 477,760	$ 417,580	$ 280,280	$ 97,010
79	$ 559,320	$ 533,320	$ 473,140	$ 330,490	$ 124,060
80	$ 621,370	$ 595,370	$ 535,190	$ 386,740	$ 156,900
81	$ 690,820	$ 664,820	$ 604,640	$ 450,600	$ 193,240
82	$ 767,940	$ 741,940	$ 681,760	$ 523,280	$ 237,520
83	$ 853,300	$ 827,300	$ 767,120	$ 604,640	$ 290,810
84	$ 947,790	$ 921,790	$ 861,610	$ 695,730	$ 354,540
85	$ 1,052,470	$ 1,026,470	$ 966,290	$ 797,850	$ 430,470
86	$ 1,168,460	$ 1,142,460	$ 1,082,280	$ 912,340	$ 520,510
87	$ 1,296,780	$ 1,270,780	$ 1,210,600	$ 1,039,200	$ 626,700
88	$ 1,438,290	$ 1,412,290	$ 1,352,110	$ 1,180,710	$ 751,070
89	$ 1,593,670	$ 1,567,670	$ 1,507,490	$ 1,336,090	$ 893,170
90	$ 1,763,480	$ 1,737,480	$ 1,677,300	$ 1,505,900	$ 1,048,800
91	$ 1,946,670	$ 1,920,670	$ 1,860,490	$ 1,689,090	$ 1,218,870
92	$ 2,143,740	$ 2,117,740	$ 2,057,560	$ 1,886,160	$ 1,406,150

Table 4 - Group of 1 million 33-year old healthy males

Comparison of Cumulative Premiums for different start dates

Age	Non-Smoker Male Age 33 Cum Prem	Non-Smoker Male Age 43 Cum Prem	Non-Smoker Male Age 53 Cum Prem	Non-Smoker Male Age 63 Cum Prem	Non-Smoker Male Age 73 Cum Prem
33	$ 270				
34	$ 650				
35	$ 1,130				
36	$ 1,710				
37	$ 2,380				
38	$ 3,140				
39	$ 3,990				
40	$ 4,900				
41	$ 5,880				
42	$ 6,950				
43	$ 8,160	$ 510			
44	$ 9,580	$ 1,240			
45	$ 11,260	$ 2,190			
46	$ 13,180	$ 3,330			
47	$ 15,320	$ 4,680			
48	$ 17,660	$ 6,270			
49	$ 20,190	$ 8,140			
50	$ 22,920	$ 10,280			
51	$ 25,870	$ 12,720			
52	$ 29,100	$ 15,480			
53	$ 32,730	$ 18,610	$ 1,110		
54	$ 36,770	$ 22,170	$ 2,720		
55	$ 41,270	$ 26,250	$ 4,790		
56	$ 46,310	$ 30,870	$ 7,310		
57	$ 51,930	$ 36,020	$ 10,250		
58	$ 58,340	$ 41,630	$ 13,680		
59	$ 65,360	$ 47,910	$ 17,770		
60	$ 73,120	$ 54,940	$ 22,700		
61	$ 81,790	$ 62,840	$ 28,560		
62	$ 91,590	$ 71,730	$ 35,660		
63	$ 102,660	$ 81,790	$ 44,280	$ 2,300	
64	$ 115,060	$ 93,090	$ 54,570	$ 5,720	
65	$ 128,860	$ 105,680	$ 65,880	$ 10,460	
66	$ 144,070	$ 119,480	$ 78,330	$ 16,690	
67	$ 160,700	$ 134,700	$ 92,140	$ 24,550	
68	$ 178,860	$ 152,860	$ 107,390	$ 34,070	
69	$ 198,590	$ 172,590	$ 124,440	$ 45,160	
70	$ 220,240	$ 194,240	$ 143,720	$ 57,720	
71	$ 244,040	$ 218,040	$ 165,400	$ 71,790	
72	$ 270,720	$ 244,720	$ 190,230	$ 88,860	
73	$ 300,420	$ 274,420	$ 218,220	$ 109,330	$ 7,760
74	$ 333,280	$ 307,280	$ 249,590	$ 133,600	$ 19,330
75	$ 369,600	$ 343,600	$ 284,710	$ 162,220	$ 34,310
76	$ 409,680	$ 383,680	$ 324,090	$ 195,920	$ 52,340
77	$ 454,150	$ 428,150	$ 367,970	$ 235,600	$ 73,220
78	$ 503,760	$ 477,760	$ 417,580	$ 280,280	$ 97,010
79	$ 559,320	$ 533,320	$ 473,140	$ 330,490	$ 124,060
80	$ 621,370	$ 595,370	$ 535,190	$ 386,740	$ 156,900
81	$ 690,820	$ 664,820	$ 604,640	$ 450,600	$ 193,240
82		$ 741,940	$ 681,760	$ 523,280	$ 237,520
83				$ 604,640	$ 290,810
84				$ 695,730	$ 354,540
85					$ 430,470
86					$ 520,510
87					$ 626,700
88					$ 751,070
NPV	$ 108,939	$ 104,383	$ 87,607	$ 73,862	$ 61,403

- Term insurance today is commonly sold as a "term to 95" with an initial, level guaranteed premium period. After that, because of the effects of anti-selection after the initial period, the Standard Non-forfeiture Law and the Model Life Insurance Reserves Regulation (Triple-X), a common practice is to have attained age Yearly Renewable Term rates that are a multiple (200-400%) of the valuation (reserving) mortality table. **Table 5** demonstrates the initial premiums (and subsequent guaranteed premiums once the initial guarantee has expired) representative of term policies offered for sale in 2007 with durations from 1 year to 30 years. Clearly, it is very expensive to continue to pay these high renewal premiums and most insureds would be well-advised to look for alternate sources of coverage. A universal "no-lapse" example (see discussion below) has been included for comparison.

Specific uses of life insurance should be matched to the longest possible duration of need and acquired for that time period, as implied by **Table 5.** Short-term needs include securing term loans (personal or business), divorce or alimony agreements, and business arrangements with an expectation of short-term obligations. Longer term needs include providing for family welfare while there are children at home or in college, life insurance that allows a retired couple to spend more of their resources while healthy (in anticipation that insurance proceeds on the first to die will replenish those resources), equalizing estates among family members who are and are not active in a family business, and of course, to assist in the payment of estate taxes and other liquidity needs at death.

For example, a 33-year-old male purchasing life insurance to cover – among other needs – the 30-year period of his newly acquired mortgage would be significantly better off with a guaranteed premium of $939 for each of those years than purchasing a shorter duration policy and subject to the possibility he might not qualify for a less expensive policy when the initial guarantee expires. Yet in the face of a much shorter need – perhaps to fulfill a lenders requirement for a 10-year loan to establish a business – the purchase of a 10-year term policy with a $355 annual premium is all that is necessary.

B. Transforming needs

Many individuals and families find that they have a number of different needs for life insurance, transforming as their lives and financial and family circumstances evolve. Such needs include income (or human life value) replacement, estate liquidity, estate creation, special needs and charitable giving. The 33-year-old with a new family and a new mortgage is most likely not thinking about the retirement and estate planning uses for life insurance, yet many such individuals will find themselves ultimately confronting such issues.

Whole Life is the oldest form of lifetime, level-premium life insurance, dating back to at least 1759 with the formation of the first life insurance company in the United States called the "Corporation for Relief of Poor and Distressed Presbyterian Ministers.[9]" Whole life insurance is entirely guaranteed by the issuing carrier, and the payment of a death benefit is subject only to the policyholder's timely payment of a fixed and guaranteed premium and the solvency of the insurance company. Premiums are set, reserves are created, and death benefits are paid based on actuarially conservative expectations. Because of the guaranteed nature of the contracted death benefit obligation which may span decades, an insurer needs to carefully "price" its product to deliver a reasonable return to the company's shareholders, be competitive in the marketplace, *and* be fiscally sustainable through "boom and bust" economic cycles.

Participating Whole Life (PWL) is a variation on the whole life concept wherein the insurance company – typically beneficially owned by its policyholders rather than outside shareholders – hedges the pricing of a long-term commitment by charging (and guaranteeing) a somewhat higher premium, and returning to its policyholders their pro-rata share of gains[10] through investment returns, mortality experience, and expenses that are more favorable than those incorporated in the pricing of the guaranteed premium. Historically, dividend-paying policies have generally provided greater long-term value than those policies that did not pay dividends. Since the focus of this paper is on lifetime insurance needs, any discussion of whole life policies will be focused on PWL.

Current Assumption Whole Life is essentially a hybrid of whole life and universal life policy design. The modern non-participating whole life policy has fixed premiums and guaranteed cash values based on the policy's underlying structure of guarantees, but death benefits, cash value, and/or premium payment periods can be improved when the carrier credits a rate higher than that guaranteed (and/or assesses a lower insurance charge than that guaranteed).

Universal Life (UL) was first introduced in the late 1970s at a time when interest rates in the U.S. were approaching unprecedented high levels in the economy. The first insurers selling such policies were able to segregate new investment portfolios earning as much as 15% in federally guaranteed bonds, resulting in "current assumption" policies initially crediting as much as 14% to its cash value account after deductions for insurance, expense charges and profits. In fact, a key feature of such policies was the "unbundling" or "transparency" of the various components of crediting rates, cost of insurance, and other expenses. Additional characteristics distinguishing UL policies from their whole life forebears were that there were no guaranteed premiums or benefits and the policy owner had only to pay enough into the policy to maintain a positive balance in the cash value account so that the policy could be

No-Lapse-Guarantee (NLG) universal life is a major subset of universal/variable universal life design in which – in exchange for the prompt payment of a stipulated (and guaranteed) premium – the policy will not lapse *regardless* of the fact that the cash value may decline to $0, a condition that would normally cause a universal life insurance policy to lapse. This is a significant departure from the principles of universal policy design and is the one type of universal-style policy that falls within the "guaranteed premium" category of term and whole life insurance products. There are, however, substantial restrictions on NLG universal Life policies, including limited cash value. Such policies are often considered "term to age 100" to reflect the reality of the lifetime guarantee but without the typical cash value that would accompany a lifetime policy. Because of the significant guarantee of sufficiency, owners should not anticipate accruing substantial cash values; in fact, the relatively nominal guaranteed cash value is all that should be expected. While the guarantees of NLG universal Life are especially appealing in times of low credited interest rates, they could lose their appeal vis-à-vis non-guaranteed UL competitors when crediting rates in the marketplace exceed 5% or 6%.

Joint Lives (more commonly known as "second to die") life insurance is generally available in all permanent forms of life insurance. Its most useful application is in estate planning for which the policy's proceeds are used to pay estate taxes and other costs (and where proceeds are generally not needed until the second death of a husband and wife). These policies are usually owned by a Trust or other third-party owner (avoiding estate taxes levies on the very asset that is used to fund tax payments). Joint lives policies can be very effective for their specific niche of estate planning, but should not be considered if the surviving spouse is likely to need additional financial resources at the death of the first spouse. It is not the intention in this treatise on life insurance to address the value of insuring two lives versus one for lifetime needs; hence, joint lives policies will not specifically be referenced as a qualifier within the range of policies available for permanent life insurance.

Table 5 - 33-year old healthy male

Term Life Insurance - Calculated ART to 30-year Term

Age	YRT	10-YR	15-YR	20-YR	25-YR	30-YR	Lifetime No-Lapse Guarantee UL
33	$ 385	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
34	$ 415	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
35	$ 425	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
36	$ 445	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
37	$ 475	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
38	$ 2,655	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
39	$ 2,815	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
40	$ 2,995	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
41	$ 3,235	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
42	$ 3,525	$ 355	$ 440	$ 590	$ 910	$ 939	$ 4,478
43	$ 3,795	$ 3,865	$ 440	$ 590	$ 910	$ 939	$ 4,478
44	$ 4,065	$ 4,265	$ 440	$ 590	$ 910	$ 939	$ 4,478
45	$ 4,395	$ 4,725	$ 440	$ 590	$ 910	$ 939	$ 4,478
46	$ 4,745	$ 5,165	$ 440	$ 590	$ 910	$ 939	$ 4,478
47	$ 5,115	$ 5,645	$ 440	$ 590	$ 910	$ 939	$ 4,478
48	$ 5,525	$ 5,925	$ 6,340	$ 590	$ 910	$ 939	$ 4,478
49	$ 5,975	$ 6,245	$ 6,860	$ 590	$ 910	$ 939	$ 4,478
50	$ 6,455	$ 9,705	$ 7,480	$ 590	$ 910	$ 939	$ 4,478
51	$ 7,035	$ 7,245	$ 8,080	$ 590	$ 910	$ 939	$ 4,478
52	$ 7,695	$ 7,985	$ 8,840	$ 590	$ 910	$ 939	$ 4,478
53	$ 8,435	$ 8,785	$ 9,700	$ 9,700	$ 910	$ 939	$ 4,478
54	$ 9,295	$ 9,805	$ 10,690	$ 10,690	$ 910	$ 939	$ 4,478
55	$ 10,245	$ 11,065	$ 11,780	$ 11,780	$ 910	$ 939	$ 4,478
56	$ 11,295	$ 12,345	$ 13,000	$ 13,000	$ 910	$ 939	$ 4,478
57	$ 12,415	$ 13,725	$ 14,290	$ 14,290	$ 910	$ 939	$ 4,478
58	$ 13,625	$ 14,905	$ 15,680	$ 15,680	$ 20,900	$ 939	$ 4,478
59	$ 14,985	$ 16,265	$ 17,260	$ 17,260	$ 20,900	$ 939	$ 4,478
60	$ 16,505	$ 17,905	$ 19,010	$ 19,010	$ 20,900	$ 939	$ 4,478
61	$ 18,195	$ 19,505	$ 21,660	$ 21,660	$ 20,900	$ 939	$ 4,478
62	$ 20,125	$ 22,345	$ 24,720	$ 24,720	$ 20,900	$ 939	$ 4,478
63	$ 22,315	$ 25,085	$ 28,280	$ 28,280	$ 34,280	$ 29,589	$ 4,478
64	$ 24,805	$ 27,965	$ 32,380	$ 32,380	$ 38,100	$ 32,989	$ 4,478
65	$ 27,545	$ 31,005	$ 37,030	$ 37,030	$ 42,320	$ 36,579	$ 4,478
66	$ 30,495	$ 34,085	$ 42,170	$ 42,170	$ 46,860	$ 40,209	$ 4,478
67	$ 33,695	$ 37,205	$ 47,890	$ 47,890	$ 51,780	$ 43,899	$ 4,478
68	$ 37,125	$ 40,565	$ 54,200	$ 54,200	$ 57,060	$ 47,859	$ 4,478
69	$ 40,865	$ 44,045	$ 62,810	$ 62,810	$ 62,820	$ 51,969	$ 4,478
70	$ 45,095	$ 48,265	$ 71,040	$ 71,040	$ 69,320	$ 56,949	$ 4,478
71	$ 49,875	$ 52,985	$ 81,760	$ 81,760	$ 76,930	$ 62,519	$ 4,478
72	$ 55,405	$ 59,185	$ 91,550	$ 91,550	$ 85,180	$ 69,829	$ 4,478
73	$ 61,745	$ 65,725	$ 104,420	$ 104,420	$ 94,940	$ 77,549	$ 4,478
74	$ 68,875	$ 72,605	$ 119,120	$ 119,120	$ 105,900	$ 85,669	$ 4,478
75	$ 76,515	$ 80,125	$ 135,290	$ 135,290	$ 116,920	$ 94,539	$ 4,478
76	$ 84,655	$ 88,325	$ 152,940	$ 152,940	$ 127,730	$ 104,219	$ 4,478
77	$ 93,205	$ 97,845	$ 171,990	$ 171,990	$ 140,240	$ 115,449	$ 4,478
78	$ 102,085	$ 108,965	$ 192,300	$ 192,300	$ 154,790	$ 128,569	$ 4,478
79	$ 111,515	$ 121,805	$ 214,350	$ 214,350	$ 171,500	$ 143,719	$ 4,478
80	$ 121,845	$ 135,805	$ 238,910	$ 238,910	$ 184,880	$ 160,239	$ 4,478
81	$ 133,355	$ 151,745	$ 266,600	$ 266,600	$ 204,740	$ 179,049	$ 4,478
NPV	$ 231,050	$ 240,594	$ 329,827	$ 317,077	$ 278,084	$ 213,866	$ 81,360

Insurance Product Matrix

Policy Type	Yearly Renewable Term	Level Premium Term Life	Universal Life	Variable Universal Life	No-Lapse Guar. Universal Life	Participating Whole Life
Best for	Very short-term needs such as securing a 1-year term loan	Longer-term needs that are clearly not lifetime needs	Lifetime coverage with considerations of budgetary restrictions or the need for flexible payments	Lifetime coverage with little or no budgetary restrictions *and* a high tolerance for short-term volatility	Lifetime coverage at the lowest possible cost - with no need for flexible premium arrangements or the possibility of an increasing death benefit	Lifetime coverage in which cost is less of a factor than long-term benefits including increasing death benefit and access to cash value
Not best for	Any uncertainty as to how long coverage will be needed	Any uncertainty as to how long coverage will be needed.	When flexible payment opportunity may lead to failure to pay needed premiums	Those with anxiety over volatile market activity	Need for cash value and/or death benefit growth	Need for large amounts of coverage and limited resources to pay premiums. High initial premiums may restrict death benefits in Trusts with few Crummey beneficiaries.
Issues	Presumably a conversion option will not be needed; can be "shopped" on the basis of premium; A M Best rating no less than "A"	Pay for a conversion option in the event the need later becomes lifetime. Can be "shopped" on the basis of premium: A M Best rating no less than "A"	Dilemma: carrier has transferred all the sufficiency risk but retains all the control to make the in-force block of policies "profitable." Do NOT shop on basis of premium; A M Best rating no less than "A"	Illustrations do not reflect effects of volatility. First determine asset allocation and historic rates of return, and then ask for a "Monte Carlo" estimate of a premium that will sustain the policy at least to age 100.	Make certain to understand the conditions under which the guarantee can be lost - and reinstated. A M Best rating no less than "A++"	Choose from a mutual insurance company; consider "paid up additions" for dividend election. A M Best rating no less than "A"
Risk Index	0	0	3	15	0	1.8
Sample Premium - 33-M-Preferred	$385 first year	$590 level - 20 yrs	$6,304/year	$4,824/year	$4,478/year	$13,895/year
Death Benefit at Life Expectancy	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 3,665,327
NPV @ 5% of all cash flows	$ (21,729)	$ (21,761)	$ (27,332)	$ (442)	$ 5,844	$ 67,170

The use of policy illustrations

The use and flexibility of a policy illustration can be manifested in a number of ways. One method of utilizing the potential excess earning power of the policy is to let the enhancements take over the payment of premiums at some future time. The term "premium vanish," "disappearing premium," or "premium offset" is most often associated with this type of illustration. But the policy itself is not designed to "vanish" the premiums; the illustration simply calculates the current point in the future where non-guaranteed, projected enhancements give the policy owner the option of paying premiums out of excess policy values if those values in fact materialize due to favorable expense and investment experience.

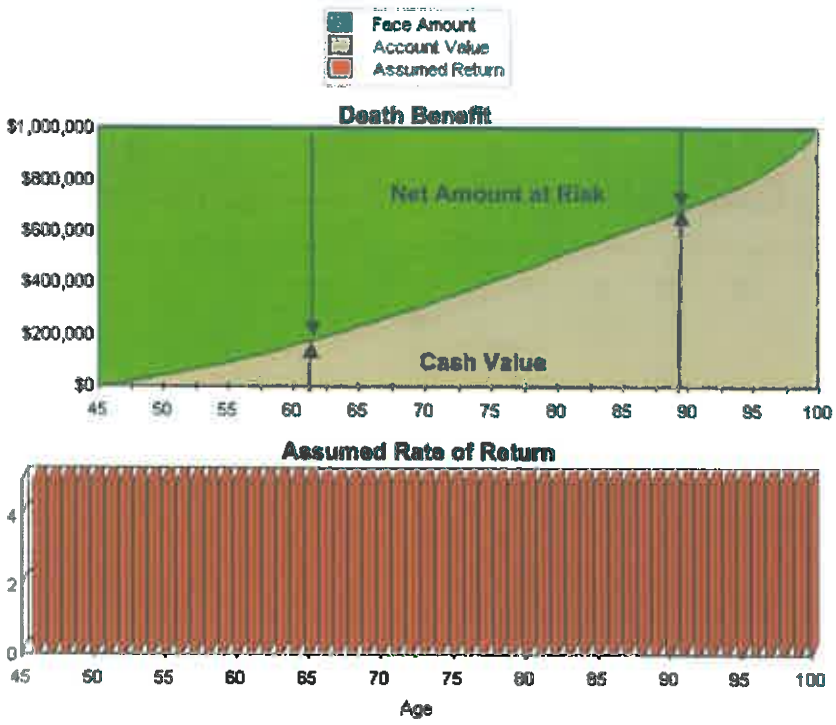
Another popular illustration – not an inherent policy design – is that of "cash flow." This type of illustration shows paying premiums for a period of time, and then withdrawing and/or borrowing cash from the policy – typically to supplement retirement income. Policy owners need to understand that most of the benefits from such an illustration come from the assumption of substantial non-guaranteed dividends or, in the case of universal-style policies, non-guaranteed elements; the amount of cash that can ultimately be taken from the policy – and for how many years – without causing the policy to lapse (and create a potential income tax liability) can only be determined over time.

In 1992 The Society of Actuaries published an extensive examination of illustrations and illustration practices associated with the purchase of life insurance. Its conclusion: " ... (when) illustrations are used to show the client how the policy works; (it is) a valid purpose of policy illustrations. Illustrations which are typically used, however, to portray the *numbers* based on certain fixed assumptions – and/or are likely to be used to compare one policy to another – are an *improper* use of the policy illustration.[17]" Furthermore, the Executive Summary of the Society's report concluded: " ... How credible are any non-guaranteed numbers projected twenty years in the future, even if constructed with integrity? How does the consumer evaluate the credibility of two illustrations if they are from different companies? Or even if they are from the same company if different products with different guarantees are being considered? *Most illustration problems arise because the illustrations create the illusion that the insurance company knows what will happen in the future and that this knowledge has been used to create the illustration.*[18]" (emphasis added)

These cautionary words from the Society of Actuaries help to summarize the reasons policy illustrations cannot effectively facilitate a cost/benefit analysis or other comparisons within multiple policy possibilities. Illustrations are representations of assumptions made in policy design. These assumptions have to do with the building blocks of carrier expense and

Appendix A provides a tutorial for understanding the long-term sustainability of a cash value policy when the underlying growth parameters are subject to volatility. An average 10% return will produce different results – especially at older ages – depending on the order of returns that make up the average. The underlying technical issue involves "net amount at risk." While the whole life ancestor of variable universal life had constantly increasing cash values (and thus constantly decreasing net amounts at risk), variable policies – reflecting the inherent volatility of the equity sub-accounts typically selected in these policies – will periodically have declining cash values, requiring simultaneous increases in net amounts at risk.[22]

Graph 1



Graph 1 portrays a perfect progression of increasing cash value and correspondingly decreasing net amount at risk, the guaranteed result of which is unique to whole life insurance. When adapted to the universal life design, there was at least the assurance that increases were protected with a guaranteed low-end return. But variable universal life introduced a heretofore unforeseen practical result of cash value "growth" – that of *negative* growth in the form of the occasional "downs" of the stock market. **Graph 2** demonstrates the challenges the life insurance industry – and its policy owners – hadn't previously directly addressed.

Universal and variable universal life product development and subsequent enhancements would not have been possible to design – or sell – without the personal computer. In turn, it was the development of the variable universal life policy that finally demonstrated what can be an enormous difference between policy illustrations and actual policy performance.

It's easy to see the dilemma technology has created for modern life insurance policies. Our mainframes can account for the daily investment fluctuations and monthly accounting of policy debits and credits, but our policy illustrations – indeed even in-force illustrations – are woefully constrained by tradition and regulation to project a constant return assumption (not to exceed 12%) as far into the future as the client's age 100 or 120. Similarly, scales of anticipated future insurance charges are projected into a distant future that may not, in fact, support the mortality and profit experience of the previously sold policies, necessitating insurance charge increases not earlier anticipated.[23] Thus, when policy illustration systems are used to calculate non-guaranteed premiums, the illustration of average rates of return (and scales of future insurance charges) disguises the potentially destructive reality of fluctuating account and net amount at risk values. This is not a fundamental flaw in policy design, but simply the result of calculating too low a funding premium.

Fortunately, there's a better way to visualize how variable policies work and to establish an initial premium funding level that – while not suggesting it will be more "accurate" than that calculated by a conventional illustration system – allows for a more realistic beginning point from which the advisor and client can then manage over the many years the policy is likely to remain in force.

Statistical Analysis

Statistical analysis facilitates an understanding of whether an "illustrated" but non-guaranteed VUL premium has a reasonable chance to fulfill the expectations of clients willing to take risk – and potential opportunity – in their life insurance policies. In a new example using this approach, we can assess the $6,036 annual premium suggested by an illustration system which assumes the 11.5% long-term average rate of return of an all equity asset allocation (in fact the S&P 500®) for a 45-year-old seeking $1 million of coverage. Departing from the illustration's simplistic calculation process, we'll randomize ("Monte Carlo")[24] the actual, volatile monthly returns of the *last* 55 years as a way of understanding the probabilities an aggressive investor might face in an uncertain future 55 years. Implicit in this line of reasoning is that we can't reasonably forecast the future based on a linear repetition of the past.

Additional and unique information is also available using this analytical approach: amongst the 1000 random trials illustrations using the higher $8,240 premium, just 93 illustrations failed to reach age 100 before lapse. The earliest lapse in that group 93 occurred at age 82. On the other hand, of the 907 illustrations that did sustain to age 100, the average death benefit at life expectancy for healthy 45 year-old males (approximately age 88) is over $3.5 million and the death benefit at age 100 is more than $10.1 million. It's also possible to capture arithmetic and geometric mean return calculations, as well as the standard deviation of the randomized process. **Graph 4.**

Graph 4

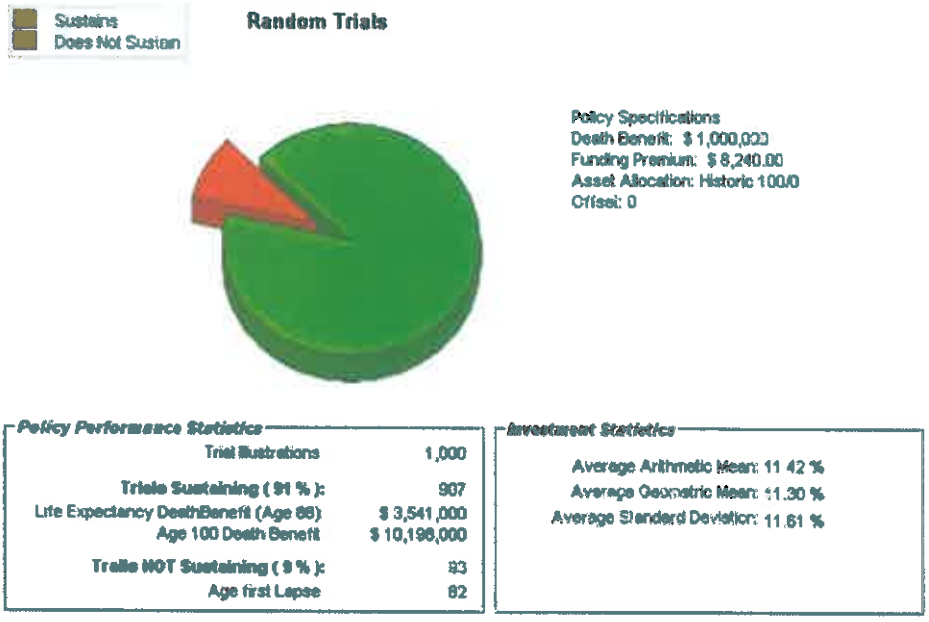


Table 9 takes the in-force funding premium recommendations of Table 8 and performs additional statistical analysis. The $3,653 funding premium "recommended" by a 12% constant calculation has an unacceptably low 41% chance of success. The 80% probability of success of the 10% funding premium calculation is at least in the range of what truly risk tolerant individuals might accept. Both the $5,063 and $6,827 funding premiums should be completely sufficient for most risk tolerant buyers of variable life insurance, but note that only the $6,827 premium eliminates the rare possibility of an early lapse amongst the 1000 trial illustrations.

Table 10 - Outcome Probability Analysis

$1 Million Variable Universal Life purchased in 1995 and reassessed in 2005 (33-M-Preferred)

	Initial Crediting Rate 12%	10%	8%	6%
Revised Premium	$ 3,653	$ 4,135	$ 5,053	$ 6,027
Trial Illustrations SUSTAINING	411	798	969	1000
FAILING	589	202	31	0
Life Expectancy	87	87	87	87
Earliest lapse	62	70	79	100
Average Death Benefit @ Age 87	$2.5 million	$4 million	$7 million	$12.9 million
@ Age 100	$8.1 million	$13.6 million	$23.9 million	$42.9 million
OPA Revised Premium	$ 5,750	$ 4,750	NA	NA
Average Death Benefit @ Age 87	$4.3 million	$4.9 million		
@ Age 100	$13.9 million	$15.7 million		

As seen in Table 11, the premium reassessment 10 years after the policy was purchased suggests future annual "premiums" should be in the range of $9,750 to $11,750, depending on the 10th year account value. Statistical (i.e. Monte Carlo) in-force evaluations should be conducted every 3-5 years.

Table 11 - Outcome Probability Analysis

$1 Million Universal Life purchased in 1985 and reassessed in 1995

	Initial Crediting Rate 12%	10%	8%	6%
Revised Premium for current 6% crediting rate	$ 8,100	$ 7,759	$ 6,969	$ 5,380
Trial Illustrations SUSTAINING	459	513	431	450
FAILING	541	487	569	550
Life Expectancy	87	87	87	87
Earliest lapse	84	83	83	81
Average Death Benefit @ Age 87	$1.8 million	$1.9 million	$2.0 million	$1.9 million
@ Age 100	$4.4 million	$4.8 million	$4.9 million	$4.7 million
OPA Revised Premium	$ 11,750	$ 11,500	$ 11,000	$ 9,750
Average Death Benefit @ Age 87	$2.3 million	$2.4 million	$2.5 million	$2.6 million
@ Age 100	$5.4 million	$5.6 million	$5.6 million	$6.0 million

5. The "Illustration Beauty Contest" – the attractive impossibility versus the less attractive probability

Given the propensity to use a policy illustration highlighting the most favorable non-guaranteed benefits of the underlying policy, it is not surprising that illustrations are often used to suggest the superiority of one policy over another, especially if there are two or more agents competing for the attention of a prospective insured. To paraphrase Aristotle: "we are drawn to the attractive impossibility versus the less attractive probability,"[26] and nowhere is that more apparent than in the use of policy illustrations.

The best example of what in some circles has been called the "illustration beauty contest" is a financial planning situation calling for $1 million of lifetime death benefit, and for which an insurance agent has presented a policy illustration characterizing $1 million of variable universal life with an annual premium of $12,000. The prospective buyer has been conditioned to shop for the best deal rather than accepting the first offer that comes along, and seeks out another agent's quote. The second illustration ostensibly demonstrates the same death benefit for an illustrated outlay of just $6,000 per year.

Few consumers would hesitate in the face of such a difference to choose the $6,000 annual premium solution rather than one that costs twice as much. The conceptual error here, however, is that neither of those amounts are, in fact, *premiums*. In reality, they're *educated guesses* based on different assumptions. The $6,000 funding premium "solution" is derived from an assumption of a constant investment return of 12% (which is admittedly not much higher than the long-term average of the S&P 500®). The funding premium "solution" of $12,000 takes into account the inherent volatility of the S&P 500® and the need for the higher funding premium to compensate for times when the market may be down 10 – 20% in a given period and the possibility that the market is unlikely to perform consistently at that level for the period the policy is held. However, these considerations are rarely apparent in a variable universal life policy illustration.

Earlier in this section it was suggested that the "attractive impossibility" can be characterized by policy illustrations as well as explaining the popularity of lotteries. Life insurance is sometimes described as a "gamble between you and the insurance company," a concept rejected by insurance professionals but that nonetheless deserves an objective examination: is the purchase of life insurance a gamble? And if so, is it true in just some instances or with respect to all types of life insurance?

6. For lifelong needs: what underlying factors should be considered when choosing one style of life insurance over another?

In the context of exploring a lifelong need for life insurance, it is appropriate to create an analytical process addressing the use of all forms of "permanent" life insurance while at the same time taking into consideration that there may be certain subjective issues such as assumed policy sufficiency risk that would be less attractive to some insurance buyers.

The high interest rates of the late 1970s and early-to-mid 1980s – with the underlying high inflation – had an especially negative effect on traditional life insurance policies. The guaranteed reserve rate of whole life policies had been 4% since the mid-1960s; during those years that bank savings interest rates were reasonably comparable[31], these policies could make sense when considered a combination of life insurance protection and long-term savings should death not come prematurely. But as interest rates began to spike in the late 1970s[32], the superior total returns on the relatively short "new money" portfolios of universal life and the much slower moving increases in longer "old money" portfolios backing whole life began to have a dramatically negative effect on the sale of whole life. In 1976, whole life policies represented 88% of all permanent life insurance sales (measured by annualized premium); by 1985, universal life had peaked at 38% of new permanent sales and whole life had declined to 47%.[33]

This is not to say that whole life policies had suddenly become a bad "deal," but that new money insurance products such as universal life put whole life at a disadvantage in a marketplace in which buyers became increasingly focused on paying as little for life insurance as possible and/or seeking the highest possible interest rate returns. Note that the relatively short-term escalation in interest rates occurred primarily in the five years between 1976 and 1981. The subsequent decline in interest rates took significantly longer, from 1981 through 2003.

There has been little change over the decades in the composition of an insurance company's investments held in reserve to fulfill the death benefit promise to its customers. While the mix of investments is not strictly regulated, "risk-based capital" ratios tend not only to keep carriers mostly on the fixed return side (typically 90% or more of carrier assets are invested in U.S. Government and high-grade corporate bonds, high grade commercial mortgages, and policy loans[34]), but market competition also inspires a general lock-step with its peers. Peer

7. Policy standards analysis

From the perspective of the insurance company, the lifelong cost of providing a death benefit through the vehicle of a life insurance policy is subject to two major factors: the actual (but not yet known) date of death of the insured, and the *law of large numbers*. Since insurance companies deal in the underwriting and management of millions of policies, the law of large numbers[36] dictates that in the long term, peer life insurance companies will experience very similar mortality (death claim) experience. If the distribution and policy service systems are similar, it is expected that those long-term costs will be more similar than not. The law of large numbers is behind the actuarial science that indicates 270 out of 1,000,000 33-year-olds qualifying for preferred rate life insurance will die this year, even though no actuary could tell you *which* of such insureds will die.

Thus, the law of large numbers and its applicability to life insurance lends itself to the creation – at least for analysis purposes – of *policy standards* as a way of bypassing the problematic and controversial review of one insurer's policy as being representative of the industry. There *are* differences in projected expenses, mortality and investment return at the outset; it's just that the expected future result is expected to migrate to the mean expectation.

A *policy standard* is derived by looking at industry resources such as actuarial tables, general levels of investment returns, and the average of other expenses incurred by insurance companies in the management and maintenance of blocks of life insurance policies. The result is the projection of an industry average to produce an actuarially certified, hypothetical "policy" that cannot be purchased, but that nonetheless reasonably represents what would have been available in the examined time frame. Because scales of COI (term insurance rates projected into the future for increasing age) and other expense assumptions may be somewhat different between universal life, variable universal life and whole life, three separate Policy Standards policies have been created for this study. In the case of universal and variable universal life – not generally available as early as 1975 – reasonable simulations of likely pricing have been modeled.[37]

The third possible policy choice was a variable universal Life. VUL benefits are closely tied to the long-term experience of the investment component of the policy. This, in turn, is dependent upon both the timing and amount of funding premium payments as well as the portfolio asset allocation. Once again, and most importantly with variable policy illustrations that will distort long-term benefits or disadvantages for the use of constant return assumptions, actual historic rates of return from 1975 through 2004 are utilized in values calculations for four different asset mixes (also called investment allocations). Below are the results based on these investment mix possibilities, starting with the most conservative and ending with the most aggressive results as applied to the Policy Standards. (For example, a "20-80" Asset Mix indicates that 20% of the policy assets are in equities and 80% of policy assets are in fixed returns (bonds).)

Variable Universal Life	$6,813 Premium	45-Male	$250,000 Death Benefit
Issued 1974	Death Benefit = Scheduled Benefit + Cash Value		

	20-80 Mix	60-40 Mix	80-20 Mix	100-0 Mix
30-year Total Death Benefit	$ 692,490	$ 980,863	$ 1,165,717	$ 1,377,395
30-year Total Cash Value	$ 442,490	$ 730,863	$ 915,717	$ 1,127,395

Our examples above use actual returns from 1975 through 2004 related to the asset allocation assumptions and are assumed to be re-balanced each year to the target investment mix. By contrast, all illustrations available to the prospective buyer erroneously assume a constant rate of return for the entire policy period. Further, illustration rates are almost always chosen to reflect the buyer's assumption of a "possible" long-term average rate of return without much attention to the underlying asset allocation.

However, one of the significant issues to be examined is the likelihood a policy owner purchasing such an insurance policy at age 45 is likely to maintain an aggressive allocation throughout his or her life. Hence, a final Asset Mix matrix is necessary, in this case to assume an initial aggressive portfolio of 80% equities and 20% fixed returns, graded linearly over the 30-year period (age 75) to a more conservative 20-80 mix. Note that this performance, which may be what many advisors would tend to advise in practice, exhibits slightly poorer performance over the time period than the par whole life. The final example represents the VUL Policy Standard with progressively conservative asset allocations beginning with the 80-20 allocation:

Following are the results based on the previously described investment mix possibilities for VUL, starting with the most conservative and ending with the most aggressive:

Variable Universal Life	$11,900 Premium	60-Female	$250,000 Death Benefit
Issued 1974		Death Benefit = Scheduled Benefit + Cash Value	

	20-80 Mix	60-40 Mix	80-20 Mix	100-0 Mix
30-year Total Death Benefit	$ 918,165	$ 1,415,625	$ 1,736,515	$ 2,105,192
30-year Total Cash Value	$ 668,165	$ 1,165,625	$ 1,486,515	$ 1,855,192

To complete the comparison, a final Asset Mix matrix is necessary to assume grading back the asset allocation over a period of years. In respect of the 60-year-old's fewer years to life expectancy and the inherent tendency to be more conservative with investments at age 60, we will assume an initial 60-40 asset allocation grading linearly over 20 years until a 20-80 mix is achieved, and then held at that mix until maturity:

Variable Universal Life	$11,900 Premium	60-Female
Issued 1974	60-40 GRADED to 20-80 Mix	
$250,000 Death Benefit		
Death Benefit = Scheduled Benefit + Cash Value		

	Results
30-year Total Death Benefit	$ 944,452
30-year Total Cash Value	$ 694,452

Revisiting the Product matrix: Is there one type of life insurance that delivers more "value" than another?

One of the most asked questions regarding policy selection is "which policy should I buy?" Perhaps the question is better framed as: "for my specific budget, timeframe of need, and tolerance for risk and overall financial situation and resources, what type of life insurance will best meet my needs?"

Table 7A - 33-year old healthy male - $1,000,000 death benefit

Life Insurance Premiums / Death Benefits to Life Expectancy

Year	5-yr Term	10-yr Term	20-yr Term	30-yr Term	No-Lapse Guarantee UL	Universal Life	8% Variable Univ. Life	Whole Life
1	$ 385	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
2	$ 415	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
3	$ 425	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
4	$ 445	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
5	$ 475	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
6	$ 2,655	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
7	$ 2,815	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
8	$ 2,995	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
9	$ 3,235	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
10	$ 3,525	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
11	$ 3,795	$ 3,865	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
12	$ 4,065	$ 4,265	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
13	$ 4,395	$ 4,725	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
14	$ 4,745	$ 5,165	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
15	$ 5,115	$ 5,645	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
16	$ 5,525	$ 5,925	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
17	$ 5,975	$ 6,245	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
18	$ 6,455	$ 9,705	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
19	$ 7,035	$ 7,245	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
20	$ 7,695	$ 7,985	$ 590	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
21	$ 8,435	$ 8,785	$ 9,700	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
22	$ 9,295	$ 9,805	$ 10,690	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
23	$ 10,245	$ 11,065	$ 11,780	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
24	$ 11,295	$ 12,345	$ 13,000	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
25	$ 12,415	$ 13,725	$ 14,290	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
26	$ 13,625	$ 14,905	$ 15,680	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
27	$ 14,985	$ 16,265	$ 17,260	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
28	$ 16,505	$ 17,905	$ 19,010	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
29	$ 18,195	$ 19,505	$ 21,660	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
30	$ 20,125	$ 22,345	$ 24,720	$ 939	$ 4,478	$ 6,304	$ 4,824	$ 11,290
31	$ 22,315	$ 25,085	$ 28,280	$ 29,589	$ 4,478	$ 6,304	$ 4,824	$ 11,290
32	$ 24,805	$ 27,965	$ 32,380	$ 32,985	$ 4,478	$ 6,304	$ 4,824	$ 11,290
33	$ 27,545	$ 31,005	$ 37,030	$ 36,579	$ 4,478	$ 6,304	$ 4,824	$ 11,290
34	$ 30,495	$ 34,085	$ 42,170	$ 40,209	$ 4,478	$ 6,304	$ 4,824	$ 11,290
35	$ 33,695	$ 37,205	$ 47,890	$ 43,899	$ 4,478	$ 6,304	$ 4,824	$ 11,290
36	$ 37,125	$ 40,565	$ 54,200	$ 47,859	$ 4,478	$ 6,304	$ 4,824	$ 11,290
37	$ 40,865	$ 44,045	$ 62,810	$ 51,969	$ 4,478	$ 6,304	$ 4,824	$ 11,290
38	$ 45,095	$ 48,265	$ 71,040	$ 56,949	$ 4,478	$ 6,304	$ 4,824	$ 11,290
39	$ 49,875	$ 52,985	$ 81,760	$ 62,519	$ 4,478	$ 6,304	$ 4,824	$ 11,290
40	$ 55,405	$ 59,185	$ 91,550	$ 69,829	$ 4,478	$ 6,304	$ 4,824	$ 11,290
41	$ 61,745	$ 65,725	$ 104,420	$ 77,549	$ 4,478	$ 6,304	$ 4,824	$ 11,290
42	$ 68,875	$ 72,605	$ 119,120	$ 85,669	$ 4,478	$ 6,304	$ 4,824	$ 11,290
43	$ 76,515	$ 80,125	$ 135,290	$ 94,539	$ 4,478	$ 6,304	$ 4,824	$ 11,290
44	$ 84,655	$ 88,325	$ 152,940	$ 104,219	$ 4,478	$ 6,304	$ 4,824	$ 11,290
45	$ 93,205	$ 97,845	$ 171,990	$ 115,449	$ 4,478	$ 6,304	$ 4,824	$ 11,290
46	$ 102,085	$ 108,965	$ 192,300	$ 128,569	$ 4,478	$ 6,304	$ 4,824	$ 11,290
47	$ 111,515	$ 121,805	$ 214,350	$ 143,719	$ 4,478	$ 6,304	$ 4,824	$ 11,290
48	$ 121,845	$ 135,805	$ 238,910	$ 160,239	$ 4,478	$ 6,304	$ 4,824	$ 11,290
49	$ 133,355	$ 151,745	$ 266,600	$ 179,049	$ 4,478	$ 6,304	$ 4,824	$ 11,290
Death benefit	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($3,567,605)
NPV	$143,847	$153,391	$229,874	$126,662	($5,844)	$27,332	$442	($105,984)

Table 7C - 33-year old healthy male - $1,000,000 death benefit

Life Insurance Premiums / Death Benefits to Life Expectancy

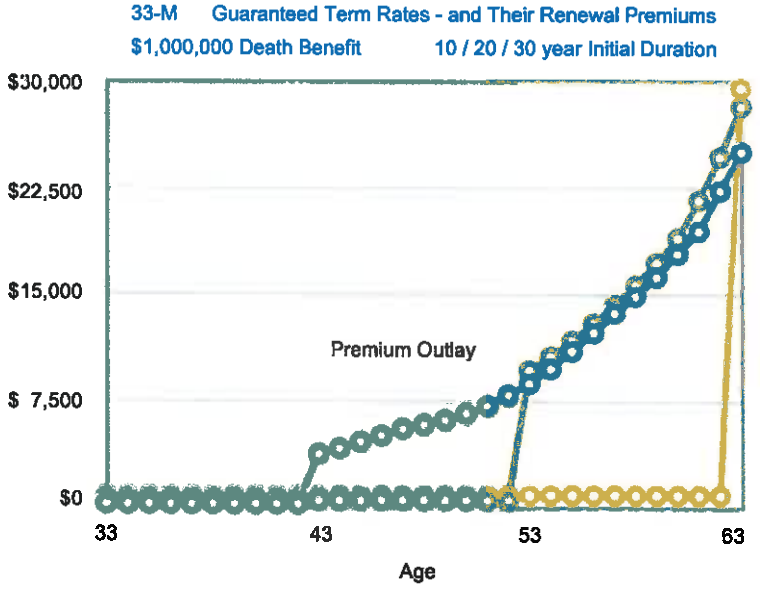
Year	5-yr Term	10-yr Term	20-yr Term	30-yr Term	No-Lapse Guarantee UL	Universal Life	8% Variable Univ. Life	Whole Life
1	$ 385	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
2	$ 415	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
3	$ 425	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
4	$ 445	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
5	$ 475	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
6	$ 2,655	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
7	$ 2,815	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
8	$ 2,995	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
9	$ 3,235	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
10	$ 3,525	$ 355	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
11	$ 3,795	$ 3,865	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
12	$ 4,065	$ 4,265	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
13	$ 4,395	$ 4,725	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
14	$ 4,745	$ 5,165	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
15	$ 5,115	$ 5,645	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
16	$ 5,525	$ 5,925	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
17	$ 5,975	$ 6,245	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
18	$ 6,455	$ 9,705	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
19	$ 7,035	$ 7,245	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
20	$ 7,695	$ 7,985	$ 590	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
21	$ 8,435	$ 8,785	$ 9,700	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
22	$ 9,295	$ 9,805	$ 10,690	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
23	$ 10,245	$ 11,065	$ 11,780	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
24	$ 11,295	$ 12,345	$ 13,000	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
25	$ 12,415	$ 13,725	$ 14,290	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
26	$ 13,625	$ 14,905	$ 15,680	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
27	$ 14,985	$ 16,265	$ 17,260	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
28	$ 16,505	$ 17,905	$ 19,010	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
29	$ 18,195	$ 19,505	$ 21,660	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
30	$ 20,125	$ 22,345	$ 24,720	$ 939	$ 4,478	$ 6,304	$ 11,290	$ 11,290
31	$ 22,315	$ 25,085	$ 28,280	$ 29,589	$ 4,478	$ 6,304	$ 11,290	$ 11,290
32	$ 24,805	$ 27,965	$ 32,380	$ 32,989	$ 4,478	$ 6,304	$ 11,290	$ 11,290
33	$ 27,545	$ 31,005	$ 37,030	$ 36,579	$ 4,478	$ 6,304	$ 11,290	$ 11,290
34	$ 30,495	$ 34,085	$ 42,170	$ 40,209	$ 4,478	$ 6,304	$ 11,290	$ 11,290
35	$ 33,695	$ 37,205	$ 47,890	$ 43,899	$ 4,478	$ 6,304	$ 11,290	$ 11,290
36	$ 37,125	$ 40,565	$ 54,200	$ 47,859	$ 4,478	$ 6,304	$ 11,290	$ 11,290
37	$ 40,865	$ 44,045	$ 62,810	$ 51,969	$ 4,478	$ 6,304	$ 11,290	$ 11,290
38	$ 45,095	$ 48,265	$ 71,040	$ 56,949	$ 4,478	$ 6,304	$ 11,290	$ 11,290
39	$ 49,875	$ 52,985	$ 81,760	$ 62,519	$ 4,478	$ 6,304	$ 11,290	$ 11,290
40	$ 55,405	$ 59,185	$ 91,550	$ 69,829	$ 4,478	$ 6,304	$ 11,290	$ 11,290
41	$ 61,745	$ 65,725	$ 104,420	$ 77,549	$ 4,478	$ 6,304	$ 11,290	$ 11,290
42	$ 68,875	$ 72,605	$ 119,120	$ 85,669	$ 4,478	$ 6,304	$ 11,290	$ 11,290
43	$ 76,515	$ 80,125	$ 135,290	$ 94,539	$ 4,478	$ 6,304	$ 11,290	$ 11,290
44	$ 84,655	$ 88,325	$ 152,940	$ 104,219	$ 4,478	$ 6,304	$ 11,290	$ 11,290
45	$ 93,205	$ 97,845	$ 171,990	$ 115,449	$ 4,478	$ 6,304	$ 11,290	$ 11,290
46	$ 102,085	$ 108,965	$ 192,300	$ 128,569	$ 4,478	$ 6,304	$ 11,290	$ 11,290
47	$ 111,515	$ 121,805	$ 214,350	$ 143,719	$ 4,478	$ 6,304	$ 11,290	$ 11,290
48	$ 121,845	$ 135,805	$ 238,910	$ 160,239	$ 4,478	$ 6,304	$ 11,290	$ 11,290
49	$ 133,355	$ 151,745	$ 266,600	$ 179,049	$ 4,478	$ 6,304	$ 11,290	$ 11,290
Death benefit	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($1,000,000)	($3,446,223)	($3,567,605)
NPV	$143,847	$153,391	$229,874	$126,662	($5,844)	$27,332	($95,399)	($105,984)

Analysis

We offer three approaches or "views" to assess the efficacy of BTID. All views assume lifetime uses for life insurance and the expectation that the consumer wants to optimize retirement income from investment assets as well as desires to leave a legacy to his family. Should he or she "buy term and invest the difference" ... or buy permanent life insurance to achieve the same objectives? The Policy Standard developed in Chapter 7 will be used for participating whole life values.

Analytic View #1 – with a focus on price

Tables 3 and 5 demonstrate that while term insurance is very affordable (in this example for a 33-M "best class") during the primary premium guarantee period (five to 30 years), annual premiums become very unaffordable once the premium reverts to the post-period guarantee for policy renewal. This "fact" is the basis for the BTID approach, but it is based on the assumption that the consumer knows he or she won't want to have coverage beyond the original term of the policy and/or won't be disturbed by the absence of the coverage once the premium begins its escalation. Lifetime insurance coverage cannot practically or affordably be maintained with term insurance.[39]



Rule of thumb: The S&P 500® has averaged a compounded rate of return of approximately 10.5% since 1925. The volatility of that average has ranged from years achieving returns in excess of 47.85% in 1954 – as well as returns as low as -25.99% in 1974.[42] Unless an investor seeking lifetime life insurance is confident of his or her ability to achieve *constant* and historically *high* returns over long periods of time, BTID may not be as effective a strategy as the synergy of buying permanent forms of life insurance in conjunction with an investment portfolio.

Analytic View #3 – with a focus on retirement income

In this view, a somewhat older 45-year-old consumer wants to invest for retirement and desires to maintain a $500,000 life insurance policy. He seeks an analysis determining whether he's better off with the BTID approach, or if a permanent (i.e. participating whole life policy) would better suit his needs with a total outlay of $15,000 a year.[43]

Buy Term and Invest the Difference (Table 15)

Accumulated after-tax value @ 65:	$1,260,578
Interest only after-tax income beginning @ 65:	$ 44,120
Portfolio Legacy Value @ LE (Age 89)	$1,260,578
Life insurance Death Benefit	$ 0
Total Legacy Value @ LE (Age 89)	**$1,260,578**

Buy Whole Life and Invest the Difference (Tables 16 & 17)

Accumulated cash value and side fund @ 65:	$1,200,640
After-tax, lifetime income based on immediate annuity:	$ 61,281[44]
Portfolio Legacy Value @ LE (Age 89)	$ 0
Policy Cash Value @ LE (Age 89)	$1,437,165
Life insurance Death Benefit	$1,681,628
Total Legacy Value @ LE (Age 89)	**$1,681,628**

Table 12

Calculate equivalent interest rate for BTID

				Calculated rate	**5.18%**
Age	**Whole Life**	**30-Year term**	**Difference**		**Accumulated Difference**
33	$ 11,290	$ 939	$ 10,351		$ 10,888
34	$ 11,290	$ 939	$ 10,351		$22,340
35	$ 11,290	$ 939	$ 10,351		$34,387
36	$ 11,290	$ 939	$ 10,351		$47,058
37	$ 11,290	$ 939	$ 10,351		$60,387
38	$ 11,290	$ 939	$ 10,351		$74,407
39	$ 11,290	$ 939	$ 10,351		$89,154
40	$ 11,290	$ 939	$ 10,351		$104,666
41	$ 11,290	$ 939	$ 10,351		$120,983
42	$ 11,290	$ 939	$ 10,351		$138,145
43	$ 11,290	$ 939	$ 10,351		$156,198
44	$ 11,290	$ 939	$ 10,351		$175,188
45	$ 11,290	$ 939	$ 10,351		$195,162
46	$ 11,290	$ 939	$ 10,351		$216,172
47	$ 11,290	$ 939	$ 10,351		$238,272
48	$ 11,290	$ 939	$ 10,351		$261,518
49	$ 11,290	$ 939	$ 10,351		$285,970
50	$ 11,290	$ 939	$ 10,351		$311,691
51	$ 11,290	$ 939	$ 10,351		$338,745
52	$ 11,290	$ 939	$ 10,351		$367,202
53	$ 11,290	$ 939	$ 10,351		$397,135
54	$ 11,290	$ 939	$ 10,351		$428,621
55	$ 11,290	$ 939	$ 10,351		$461,740
56	$ 11,290	$ 939	$ 10,351		$496,577
57	$ 11,290	$ 939	$ 10,351		$533,221
58	$ 11,290	$ 939	$ 10,351		$571,765
59	$ 11,290	$ 939	$ 10,351		$612,308
60	$ 11,290	$ 939	$ 10,351		$654,954
61	$ 11,290	$ 939	$ 10,351		$699,812
62	$ 11,290	$ 939	$ 10,351		$746,997
63	$ 11,290	$ 29,589	$ (18,299)		$766,493
64	$ 11,290	$ 32,989	$ (21,699)		$783,424
65	$ 11,290	$ 36,579	$ (25,289)		$797,457
66	$ 11,290	$ 40,209	$ (28,919)		$808,399
67	$ 11,290	$ 43,899	$ (32,609)		$816,027
68	$ 11,290	$ 47,859	$ (36,569)		$819,886
69	$ 11,290	$ 51,969	$ (40,679)		$819,622
70	$ 11,290	$ 56,949	$ (45,659)		$814,106
71	$ 11,290	$ 62,519	$ (51,229)		$802,444
72	$ 11,290	$ 69,829	$ (58,539)		$782,489
73	$ 11,290	$ 77,549	$ (66,259)		$753,379
74	$ 11,290	$ 85,669	$ (74,379)		$714,217
75	$ 11,290	$ 94,539	$ (83,249)		$663,694
76	$ 11,290	$ 104,219	$ (92,929)		$600,369
77	$ 11,290	$ 115,449	$ (104,159)		$521,946
78	$ 11,290	$ 128,569	$ (117,279)		$425,656
79	$ 11,290	$ 143,719	$ (132,429)		$308,436
80	$ 11,290	$ 160,239	$ (148,949)		$167,759
81	$ 11,290	$ 179,049	$ (167,759)		($0)

Table 14

Calculate equivalent interest rate for BTID

					Calculated rate	**7.49%**
Age	**Whole Life**	**30-Year term**	**Difference**		**Accumulated Difference**	
33	$ 11,290	$ 939	$ 10,351		$ 11,126	
34	$ 11,290	$ 939	$ 10,351		$23,086	
35	$ 11,290	$ 939	$ 10,351		$35,942	
36	$ 11,290	$ 939	$ 10,351		$49,762	
37	$ 11,290	$ 939	$ 10,351		$64,616	
38	$ 11,290	$ 939	$ 10,351		$80,583	
39	$ 11,290	$ 939	$ 10,351		$97,747	
40	$ 11,290	$ 939	$ 10,351		$116,196	
41	$ 11,290	$ 939	$ 10,351		$136,027	
42	$ 11,290	$ 939	$ 10,351		$157,344	
43	$ 11,290	$ 939	$ 10,351		$180,258	
44	$ 11,290	$ 939	$ 10,351		$204,889	
45	$ 11,290	$ 939	$ 10,351		$231,365	
46	$ 11,290	$ 939	$ 10,351		$259,824	
47	$ 11,290	$ 939	$ 10,351		$290,416	
48	$ 11,290	$ 939	$ 10,351		$323,299	
49	$ 11,290	$ 939	$ 10,351		$358,645	
50	$ 11,290	$ 939	$ 10,351		$396,640	
51	$ 11,290	$ 939	$ 10,351		$437,481	
52	$ 11,290	$ 939	$ 10,351		$481,382	
53	$ 11,290	$ 939	$ 10,351		$528,572	
54	$ 11,290	$ 939	$ 10,351		$579,297	
55	$ 11,290	$ 939	$ 10,351		$633,822	
56	$ 11,290	$ 939	$ 10,351		$692,431	
57	$ 11,290	$ 939	$ 10,351		$755,432	
58	$ 11,290	$ 939	$ 10,351		$823,152	
59	$ 11,290	$ 939	$ 10,351		$895,946	
60	$ 11,290	$ 939	$ 10,351		$974,193	
61	$ 11,290	$ 939	$ 10,351		$1,058,302	
62	$ 11,290	$ 939	$ 10,351		$1,148,712	
63	$ 11,290	$ 29,589	$ (18,299)		$1,215,099	
64	$ 11,290	$ 32,989	$ (21,699)		$1,282,805	
65	$ 11,290	$ 36,579	$ (25,289)		$1,351,723	
66	$ 11,290	$ 40,209	$ (28,919)		$1,421,904	
67	$ 11,290	$ 43,899	$ (32,609)		$1,493,375	
68	$ 11,290	$ 47,859	$ (36,569)		$1,565,944	
69	$ 11,290	$ 51,969	$ (40,679)		$1,639,531	
70	$ 11,290	$ 56,949	$ (45,659)		$1,713,279	
71	$ 11,290	$ 62,519	$ (51,229)		$1,786,564	
72	$ 11,290	$ 69,829	$ (58,539)		$1,857,481	
73	$ 11,290	$ 77,549	$ (66,259)		$1,925,413	
74	$ 11,290	$ 85,669	$ (74,379)		$1,989,706	
75	$ 11,290	$ 94,539	$ (83,249)		$2,049,281	
76	$ 11,290	$ 104,219	$ (92,929)		$2,102,914	
77	$ 11,290	$ 115,449	$ (104,159)		$2,148,493	
78	$ 11,290	$ 128,569	$ (117,279)		$2,183,385	
79	$ 11,290	$ 143,719	$ (132,429)		$2,204,605	
80	$ 11,290	$ 160,239	$ (148,949)		$2,209,657	
81	$ 11,290	$ 179,049	$ (167,759)		$2,194,869	

Table 16 **Buy whole Life and Invest the Difference**

		Investment	$	5,615.00				WL premum =	$	9,385.00							
		Gross Return		8%													
								BWLID									
Year	**Term**	**BOY Inv Value**		**EOY Inv Value**		**Year's**		**Ordinary**		**Gains**		**Total**		**Deferred**			
		$ 200,000		**> Term Prem**		**Gain**		**Tax**		**Tax**		**Tax**		**Tax**			
1	865	$	205,615	$	222,064	$	16,449	$	2,467	$	925	$	3,393	$	308		
2	865	$	224,287	$	242,229	$	17,943	$	2,691	$	1,009	$	3,701	$	336		
3	865	$	244,144	$	263,675	$	19,531	$	2,930	$	1,099	$	4,028	$	366		
4	865	$	265,262	$	286,483	$	21,221	$	3,183	$	1,194	$	4,377	$	398		
5	865	$	287,721	$	310,739	$	23,018	$	3,453	$	1,295	$	4,747	$	432		
6	865	$	311,606	$	336,535	$	24,929	$	3,739	$	1,402	$	5,142	$	467		
7	865	$	337,008	$	363,969	$	26,961	$	4,044	$	1,517	$	5,561	$	506		
8	865	$	364,023	$	393,145	$	29,122	$	4,368	$	1,638	$	6,006	$	546		
9	865	$	392,754	$	424,174	$	31,420	$	4,713	$	1,767	$	6,480	$	589		
10	865	$	423,309	$	457,173	$	33,865	$	5,080	$	1,905	$	6,985	$	635		
11	865	$	455,804	$	492,268	$	36,464	$	5,470	$	2,051	$	7,521	$	684		
12	865	$	490,362	$	529,591	$	39,229	$	5,884	$	2,207	$	8,091	$	736		
13	865	$	527,115	$	569,285	$	42,169	$	6,325	$	2,372	$	8,697	$	791		
14	865	$	566,202	$	611,498	$	45,296	$	6,794	$	2,548	$	9,342	$	849		
15	865	$	607,771	$	656,393	$	48,622	$	7,293	$	2,735	$	10,028	$	912		
16	865	$	651,979	$	704,138	$	52,158	$	7,824	$	2,934	$	10,758	$	978		
17	865	$	698,995	$	754,915	$	55,920	$	8,388	$	3,145	$	11,533	$	1,048		
18	865	$	748,996	$	808,916	$	59,920	$	8,988	$	3,370	$	12,358	$	1,123		
19	865	$	802,173	$	866,346	$	64,174	$	9,626	$	3,610	$	13,236	$	1,203		
20	865	$	858,726	$	927,424	$	68,698	$	10,305	$	3,864	$	14,169	$	1,288		
		Total												$	14,196		

9. Modern portfolio theory, asset classes, and life insurance

Introduction

Stock values rise and fall on a daily basis, giving rise to short-term risk and market value volatility for which some investors experience substantial anxiety. If an investor has a reasonable time horizon, the long-term growth statistics tell a more satisfying story. For example, from 1977 through 2006, total equity returns of Large Cap stocks (comparable to the S&P 500®) reflected a 12.27% compound annual rate of return.[46] However, this historic observation of significant long-term equity returns (and the underlying volatility) is only part of the story. Inflation, taxes, and fees can significantly reduce the real *real* return of any investment. In fact, of the 12.27% nominal return for large cap equities in this 30-year period, more than 1/3 of that return was taken away by the 4.45% compound rate of inflation. Taxes and investment fees of another 2.63% reduce the apparent double-digit return to a *real* compounded return of 5.19%.

In contrast to the investor willing to incur risk, there was a shockingly low reward for those at the beginning of this 30-year period seeking an investment strategy with less short term risk and volatility. A portfolio comprised of completely safe U.S. Treasury Bonds had a 30-year compound rate of return (after accounting for inflation, taxes and fees) of just .04%. Municipal bonds, long a mainstay of conservative portfolios seeking income, produced a compound rate of return of 1.8% in that same period. (It's noteworthy that with a shorter timeframe, the results were quite different. In the five years leading up to 12/31/2006, the real return of Large Cap stocks was 2.02% while International Stocks were up a real 10.01%[47]). In investing as well as in life, "timing is everything."

It is intuitively obvious that diversifying one's investments might avoid the worst effects of a market "crash." Stocks and Bonds have historically been the main ingredients of diversification. Worried about volatility risk? Buy bonds. Worried about securing adequate long-term returns? Buy stocks. But just how to diversify? Diversify when? Only from the perspective of the end of the year can it be determined which of these major types of investments would have produced the better return if acquired at the beginning of the year. The lack of a workable method to diversify an portfolio with the objective of maximizing returns in the context of a known level of risk-taking gave rise to the development of Modern Portfolio Theory (MPT). This paradigm shifting approach to investment methodology

policy proceeds free from the reach of creditors, the possibility of drawing upon policy cash values to produce significant retirement income, and the inherent leverage of relatively low periodic payments into a capital sum – are attributes that allow a life insurance policy the tendency to be at least uncorrelated against virtually any other asset class;

- The death benefit is based on the event of death – not a market event which in turn can cause a change in value.

- Individuals with sufficient assets to retain portfolio managers are most often buyers of significant amounts of life insurance that are funded with capital rather than budgeted income. Determining from which "pockets" of portfolio investments the premiums should be paid is inherently an activity of asset allocation and re-allocation.

- Permanent life insurance intended for a lifetime can produce at least as favorable a long-term return with less risk within a portfolio of equity and fixed components than a portfolio without life insurance (a favorable efficient frontier result).

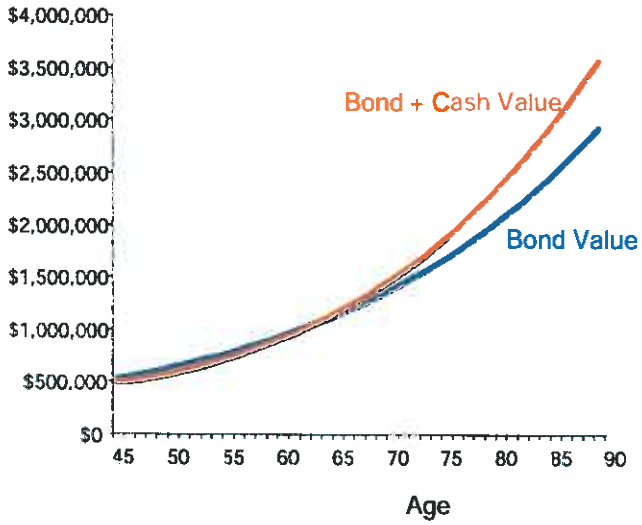
Life Insurance and Efficient Asset Allocations: Building an Efficient Investment Portfolio by including Life Insurance

When it comes to planning for retirement, many people depend on a combination of employer-sponsored retirement plans and personal savings and investments to provide retirement income above and beyond that provided by Social Security. A retirement income-focused portfolio will typically have equity components ranging from 50 – 85% when there is at least 20 years before retirement; as the timeframe gets closer to retirement, many investors will begin to scale back on the more risky equity components and increase the perceived safety and stability of fixed components.[50]

Many of the individuals who are building their retirement portfolio also recognize the value of lifetime uses for life insurance. This section will explore whether there is a synergy of investment *plus* life insurance that can serve at least as well – and with less volatility and market valuation risk – as a legacy-focused and/or retirement-focused portfolio that does not contain life insurance. To avoid getting mired in too much jargon and statistical complication, the following analytical discussion will simply compare an existing portfolio of fixed and equity elements *with* and *without* permanent life insurance intended to last a lifetime.

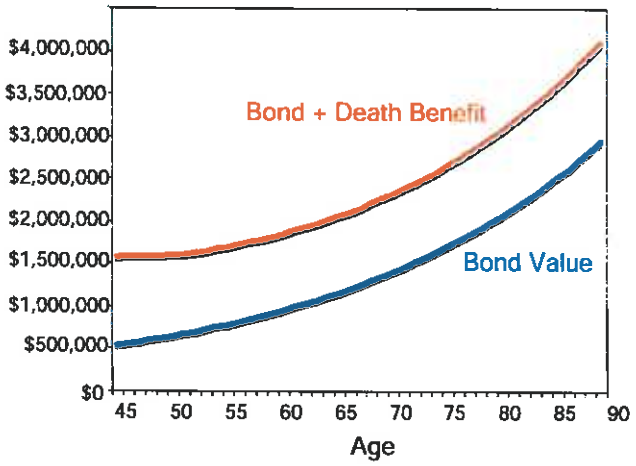
Alternatively, the $20,000 of initial bond income could be used to purchase a participating whole life policy.[51] This next graph reveals that the all-bond option produces slightly more asset value than the bond plus cash value alternative for the first 19 years.

Asset values of bond with and without Life Insurance



Further, the legacy value produces a significantly greater result in every year:

Legacy value of Bond + Death Benefit of Life Insurance



2. Assess the retirement distribution value (and subsequent legacy value) of a bond portfolio with and without life insurance

In this variation of the 45-year-old insured's $500,000 municipal bond/fixed component of the investment portfolio, we will evaluate the ability to maximize retirement distributions as well as the legacy value of the component at life expectancy.

Strategy #1: Bond Component = $500,000; convert to income @65 (Table 18)

Accumulated value @ 65	$	1,095,562
Interest-only AT income beginning @ 65	$	42,137
Portfolio legacy value @ LE+5	$	1,095,562
Risk Index		2.48
Net after-tax return		4.00%

Strategy #2: Use bond income to pay $20,000/year premium on $1,064,171 PWL policy for 20 years; amortize income from age 65 - 89 (Table 19)

Bond accumulated value @ 65	$	476,178
Policy cash value @ 65	$	611,711
Total cash @ 65	$	1,087,889
Interest/principal AT income beginning @ 65	$	49,308
Portfolio legacy value @ LE+5	$	0
Life insurance death benefit @ LE+5	$	1,357,789
Risk Index - accumulation phase		2.10
Risk Index - distribution phase		2.43
Imputed net after-tax return		4.52%

Table 18 Bond Strategy #1

		4.00%	
Year	Beg Bal	Income	End Bal
1	$ 500,000	$ 20,000	$ 520,000
2	$ 520,000	$ 20,800	$ 540,800
3	$ 540,800	$ 21,632	$ 562,432
4	$ 562,432	$ 22,497	$ 584,929
5	$ 584,929	$ 23,397	$ 608,326
6	$ 608,326	$ 24,333	$ 632,660
7	$ 632,660	$ 25,306	$ 657,966
8	$ 657,966	$ 26,319	$ 684,285
9	$ 684,285	$ 27,371	$ 711,656
10	$ 711,656	$ 28,466	$ 740,122
11	$ 740,122	$ 29,605	$ 769,727
12	$ 769,727	$ 30,789	$ 800,516
13	$ 800,516	$ 32,021	$ 832,537
14	$ 832,537	$ 33,301	$ 865,838
15	$ 865,838	$ 34,634	$ 900,472
16	$ 900,472	$ 36,019	$ 936,491
17	$ 936,491	$ 37,460	$ 973,950
18	$ 973,950	$ 38,958	$ 1,012,908
19	$ 1,012,908	$ 40,516	$ 1,053,425
20	$ 1,053,425	$ 42,137	$ 1,095,562
21	$ 1,095,562	$ 42,137	$ 1,095,562
22	$ 1,095,562	$ 42,137	$ 1,095,562
23	$ 1,095,562	$ 42,137	$ 1,095,562
24	$ 1,095,562	$ 42,137	$ 1,095,562
25	$ 1,095,562	$ 42,137	$ 1,095,562
26	$ 1,095,562	$ 42,137	$ 1,095,562
27	$ 1,095,562	$ 42,137	$ 1,095,562
28	$ 1,095,562	$ 42,137	$ 1,095,562
29	$ 1,095,562	$ 42,137	$ 1,095,562
30	$ 1,095,562	$ 42,137	$ 1,095,562
31	$ 1,095,562	$ 42,137	$ 1,095,562
32	$ 1,095,562	$ 42,137	$ 1,095,562
33	$ 1,095,562	$ 42,137	$ 1,095,562
34	$ 1,095,562	$ 42,137	$ 1,095,562
35	$ 1,095,562	$ 42,137	$ 1,095,562
36	$ 1,095,562	$ 42,137	$ 1,095,562
37	$ 1,095,562	$ 42,137	$ 1,095,562
38	$ 1,095,562	$ 42,137	$ 1,095,562
39	$ 1,095,562	$ 42,137	$ 1,095,562
40	$ 1,095,562	$ 42,137	$ 1,095,562
41	$ 1,095,562	$ 42,137	$ 1,095,562
42	$ 1,095,562	$ 42,137	$ 1,095,562
43	$ 1,095,562	$ 42,137	$ 1,095,562
44	$ 1,095,562	$ 42,137	$ 1,095,562
45	$ 1,095,562	$ 42,137	$ 1,095,562

10. Building a life insurance portfolio with efficient choices

Introduction

As previously noted, when constructing an investment portfolio, it's a well-established principle of Modern Portfolio Theory that appropriate (or "optimal") diversification is how investors maximize returns for a given amount of risk. Modern Portfolio Theory "stresses that it is wise to invest in a broad array of diverse investments."[52] A sophisticated form of this type of diversification is called "Efficient Frontier" analysis in which assets with different correlations are used to produce expected rates of return with lower volatility than that which could be expected from just one of those assets. A similar process of diversification can be applied to the efficient selection of life insurance policies intended for lifetime uses, especially (from a practical standpoint) when acquiring total life insurance in excess of $3 to $5 million.

A life insurance policy has 4 dominant attributes: 1.) its "price" (premium outlay); 2) its "cost" – (the net of the premium outlay and resulting cash value); 3) its likely death benefit (as generated by dividends or the cash value "pushes" the IRC Sec. 7702 "corridor"); and 4) any risk (to the policy owner) associated with the investments used to support the policy reserves. The specific mixture of these attributes results in a "style" of policy.

Table 7 demonstrated that NLG, universal, variable universal, and participating whole life are styles of permanent insurance that produce a "better buy" than term insurance for lifetime needs. But which style is "best"?

It should be obvious that no *one* style of insurance could be "best" for all circumstances or situations. Rather, the type(s) of insurance should be tailored to the insurance buyer's unique mix of considerations about these attributes.

- As suggested in the above table, NLG has no investment risk (that is to say, the investment risk is the insurance company's and *not* the policy owner's – unless of course the adverse investment experience is so severe that the carrier becomes insolvent). Assuming the selection of a financially superior insurance company, we would assign NLG a "Risk Index" of 0.

- At the other end of the spectrum, a VUL entirely utilizing an S&P 500® Index sub account typically has a standard deviation (a measurement of risk) of 15%; we would assign such a VUL allocation a "Risk Index" of 15.

- Participating whole life is comprised of two components: the underlying guaranteed policy which, as with NLG, has no explicit investment risk, and a non-guaranteed dividend whose risk of meeting dividend projections is most closely associated with an investment in investment-grade bonds. As indicated in the last section, we assign a "Risk Index" of "1.8" to participating whole life (blending the underlying guarantees of the base whole life policy with the bond-like portfolio returns of the non-guaranteed dividend scale).

- Because the UL policy doesn't offer sufficient unique or advantageous attributes compared to the other policy styles, it will not be considered in this context.

Table 15's Matrix of Risk Indices demonstrates all the possible ratios of NLG, VUL, and Par WL as components in a portfolio of policies ranked by "Risk Index." For ease of explanation, we will divide the range of "Risk Indices" into 4 narrative labels: Conservative (0 to 3.9), Balanced (4.0 to 7.9), Growth (8.0 to 11.9), and Aggressive Growth (12 to 15). Note that these are Risk Indices and not rates of return. A process for determining a reasonable, responsive, and effective blend of policies for maximization of desired qualities would be as follows:

1. What is the risk tolerance and time horizon of the insurance buyer, using the labels described above? For the first example, we'll assume that the response is "4" – in other words, within the higher range of "Conservative" (and comparable to a 20/80 mix of fixed and equity asset classes in a general portfolio).

If, on the other hand, availability and access to cash value – as well as the potential for an increasing death benefit over time – is of greater importance, we'll focus on the Par WL column and maximize the amount of WL suggested in the matrix. This results in 80% WL with the accompanying 0% NLG and 20% VUL.

Par WL	NLG	VUL	Risk Index
30	50	20	3.54
40	40	20	3.72
50	30	20	3.9
60	20	20	4.08
70	10	20	4.26
80	0	20	4.44
0	70	30	4.5

Thus, by selecting an appropriate mix of policies based on the underlying Risk Index, the resulting cumulative premium, cash value, and death benefits of these mixes allow the insurance buyer to achieve a more favorable result than would occur from the exclusive selection of one type of policy or another. A results summary is shown below:

Risk Factor 4		**Lowest Prem**		**Access to CV/ Increasing DB**
Total Prem	$	923,000	$	1,546,400
LE DB	$	78,754,100	$	128,712,080
Risk Index		4.50%		4.44%
NPV to LE *	$	3,165,440	$	4,590,968

Again, by selecting an appropriate mix of policies based on the underlying Risk Index, the resulting cumulative premium, cash value, and death benefits of these mixes allow the insurance buyer to achieve a more favorable result than would occur from the exclusive selection of one type of policy or another. A results summary is shown below:

Risk Factor 7		Lowest Prem		Access to CV/ Increasing DB
Total Prem	$	1,145,000	$	1,584,800
LE DB	$	97,923,500	$	132,995,810
Risk Index		7.50%		7.08%
NPV to LE *	$	3,976,915	$	4,944,626

Example 3: "Aggressive" Risk Index

In a final example, we assume that the prospective buyer of life insurance indicates a Risk Index of 12 (comparable to a 70/30 mix of equity and fixed asset classes in a general portfolio).

With a view to the different "mixes" of product styles in the chosen risk matrix: if lowest premium outlay is the greater priority, we'll focus on the NLG column and maximize the amount of NLG suggested in the matrix. This results in 20% NLG with the accompanying 10% WL and 70% VUL (a second possibility is 20% NLG with the accompanying 0% WL and 80% VUL).

Par WL	NLG	VUL	Risk Index
10	20	70	10.68
20	10	70	10.86
30	0	70	11.04
0	20	80	12
10	10	80	12.18
20	0	80	12.36
0	10	90	13.5

Matrix Results by Risk Index - $50 million initial Death Benefit

Risk Factor 4		Lowest Prem		Access to CV/ Increasing DB
Total Prem	$	923,000	$	1,546,400
LE DB	$	78,754,100	$	128,712,080
Risk Index		4.50%		4.44%
NPV to LE *	$	3,165,440	$	4,590,968

Risk Factor 7		Lowest Prem		Access to CV/ Increasing DB
Total Prem	$	1,145,000	$	1,584,800
LE DB	$	97,923,500	$	132,995,810
Risk Index		7.50%		7.08%
NPV to LE *	$	3,976,915	$	4,944,626

Risk Factor 12		Lowest Prem		Access to CV/ Increasing DB
Total Prem	$	1,458,800	$	1,642,400
LE DB	$	124,535,735	$	139,421,405
Risk Index		10.68%		11.04%
NPV to LE *	$	5,017,298	$	5,475,114

* Net Present Value (at 5%) of premiums paid to life expectancy AND receipt of the death benefit at LE. The higher the number, the more favorable the total economic outcome.

The above results are in contrast to the selection of just ONE policy for any Risk Index:

All Whole Life		All NLG		All VUL
$	1,508,000	$	590,000	$ 1,700,000
$	124,428,350	$	50,000,000	$ 145,847,000
	1.8%		0.0%	15%
$	4,237,310	$	1,948,228	$ 6,005,602

policies do not put the death benefit at risk as long as the required premium is paid.

5. While the mixing of policy styles based on Risk Indices can be a productive approach to getting the best result consistent with risk tolerance, it's also important to again point out that cash values in a participating whole life policy are not subject to market value adjustments (wherein fixed values fall when interest rates rise and fixed values rise when interest rates fall). This is true even though the insurance company's investment portfolio underlying its ability to declare and pay a dividend is subject to market value adjustment.

Table 20

Risk Index Matrix

Par WL	NLG-UL	VUL	Risk Index
1.8	0	15	
30	20	50	8.04
40	10	50	8.22
50	0	50	8.4
0	40	60	9
10	30	60	9.18
20	20	60	9.36
30	10	60	9.54
40	0	60	9.72
0	30	70	10.5
10	20	70	10.68
20	10	70	10.86
30	0	70	11.04
0	20	80	12
10	10	80	12.18
20	0	80	12.36
0	10	90	13.5
10	0	90	13.68
0	0	100	15

3. Financial expertise has become more and more specialized since the 1960's when a handful of mutual funds became a popular way to invest – or when the only two options for life insurance were term and whole life. At one time information, advice, and execution were part of the entire financial transaction – whether with a stockbroker or an insurance agent – but now it is often segmented. The classic gatekeeper role of both stockbroker and insurance agent has become blurred in an era where information about stocks and life insurance can readily be obtained on the Internet and the selected item can be purchased as easily as clicking on a shopping cart icon. *Advice* – perhaps the most critical part of the relationship between client and broker/agent – has now become a distinct commodity by itself.[55]

4. There have emerged three distinct types of decision makers: Delegators, Validators, and Self-Directors. Delegators seek a relationship with an expert whose advice they come to value, allowing them to direct their attention and energy in other directions. Self-Directors are quite the opposite; they choose to develop their own expertise and avail themselves of the many opportunities over the Internet to acquire and manage their investment and insurance choices. Validators (the largest of the three groups of decision-making styles) seek a certain amount of information on their own to more knowledgeably and actively engage in the process of managing portfolios of stocks and insurance[56]. In other words, it's useful to not only know what questions to ask, but to have a basis on which to understand and further evaluate the answers to those questions.

5. In an era of financial specialization, both Validators and Delegators will optimize their information/advice/execution process by working with experts in the various areas of investments, insurance, real estate, accounting, estate planning, etc. Individuals expressing either of these two styles will need to determine whether they will be the "captain" of the planning team, or whether that will in turn be delegated to one of the experts.

6. Experts in the various fields surrounding financial management have begun to recognize that advice is the only component that cannot be readily commoditized on the Internet – or globalized to a computer monitor half a world away.

7. Delegators and Validators should attempt to find experts with a compatible personality and "world view" in the various fields appropriate to their circumstances. In the ideal relationship, the client creates lasting relationships with these experts and is explicit about expectations and the means by which the client and expert will measure "success" or "failure." Client/expert loyalty has great value when expectations can be expressed and

12. Policy management

It's notable that most articles and discussions about life insurance are focused on whether you need it, and if so, how to buy it as cheaply as possible. Or if you already have life insurance, whether you should replace it with a more "modern" version. Of great importance - but little attention – is the need to have a *process* by which life insurance will be monitored, managed, and assessed (including replacement if deemed necessary by the *process*) over the lifetime of the insured.

Since an underlying strategy of this paper is to apply to life insurance the concepts and terminology of broader financial planning and investment management, it is not enough to focus on the up-front (i.e. time of purchase) evaluation process without recommending a process by which lifetime "in-force" progress will be measured. Indeed, in the authors' respective consulting practices, even those who are paid and charged with professional stewardship as trustees of Life Insurance Trusts will often not have a "reasoned investment strategy" with respect to trust-owned policies. Often there are no written, formal processes by which policies will be evaluated. By contrast, the typical institutional trust *investment* manager has a very specific and personalized *Investment Policy* to guide asset allocation, review criteria, and specify triggers for redeployment and/or reallocation for client's *investment* portfolios. The skills and processes applied to investment portfolios need to be applied to the management of life insurance.

In-force policy illustrations have typically been the primary (if not exclusive) tool by which non-guaranteed policy sufficiency has been measured. But as discussed in this paper, policy illustrations are of minimal value in projecting the effect of volatile market conditions – and the level of funding premiums – on the likely sustainability of the policy over the insured's lifetime. This is especially true when evaluating minimally funded policies *and* when using an in-force illustration as the primary means of projecting factors that will inevitably change over time.

Institutional trustees are guided by the Uniform Prudent Investor Act as enacted by most states. As fiduciaries, trustees have a duty to apply professional management to the assets placed under their care for the ultimate benefit of trust beneficiaries. While personal trustees may not be held to the same breach of duty standard, insurance trust grantors should expect the same level of competent advice, guidance, and assistance as they would receive from an

d. Have the insurance company's financial ratings deteriorated?
e. If there is a significant enough deviation in performance that the policy is in jeopardy to meet its long-term sustainability objectives, a third-party expert should be retained (if such expertise is not available "in house") to make recommendations that will include remediation alternatives (lower the death benefit, increase the premium, or consider replacing the policy with a lower-premium *guaranteed* policy).

3. In-force policy illustrations and updated reports from the major financial rating agencies will be a useful start in the periodic review of life insurance. But any realistic attempt to fulfill the primary responsibility of the trustee – assuring the viability of trust assets for the benefit of the beneficiaries – requires *actuarial evaluation* of the policies. Going far beyond an in-force illustration projected with constant numbers that will change over time, actuarial evaluation includes statistical analysis (i.e. Monte Carlo), benchmarking long-term cost of insurance and other expenses with peer policy styles and peer carriers.

4. Life insurance agents have the resources and ability to facilitate the policy owner's ongoing management process – whether by an individual or institutional owner. Policy owners should expect agents to initiate periodic reviews, especially when the policy is owned/administered by a non-institutional entity that is less likely to have a regular review process.

5. Variable universal life policies are especially vulnerable to lapse before death if policies are underfunded *and* if the underlying sub-accounts are not actively managed. Management not only includes initial asset allocation and subsequent rebalancing, but includes assuring that fundamental allocation continues to meet the policy owner's (or beneficiary's in the case of trust owned policies) risk/reward criteria. Since many insurance agents lack the experience or resources to make specific investment selection recommendations, it is critical for those considering variable policies to obtain professional management of the sub-accounts. We would typically recommend the use of investment managers with whom investors are actively engaged. It should be anticipated that such managers will charge fees – typically 1% of net asset value – comparable to what is paid for investment portfolio management. Since fees will reduce sub-account returns, it would be appropriate to note one last comparison of participating whole life (requiring no asset management) with the graded-mix returns discussed in Chapter 7:

13. Conclusion

The authors have spent their entire adult careers in the life insurance industry, for a combined total of more than 70 years of observation and experience. These careers have included direct sales, home office executive positions, rendering financial and actuarial opinions, and designing sophisticated software for a more complete view of possibilities when attempting to quantify an answer to "how much will this policy cost?"

Life insurance is a complicated, wonderful, frustrating, and intriguing asset to understand and acquire. It is about the economic preservation of families – or businesses – as well as being the subject of many jokes which can be appreciated for the depth of emotion that exists when we contemplate our deaths.

It is also about setting aside biases and preconceived notions and getting into the nuts and bolts of what it is, how it works, and how life insurance can best be deployed for its intended purposes. There are no "right" answers, only a process of evaluation that must take into account the needs and desires of an individual to protect those she or he loves and wants to protect from economic calamity.

From the different perspectives and assessments contained in this paper, we believe it is reasonable to summarize the following observations and conclusions:

- Short-term needs for life insurance can readily be met with term insurance for the appropriate duration, and can be primarily purchased on the basis of premium.

- It is not always certain how long life insurance will be needed; circumstances change and the uses for life insurance can transform (e.g. from protection of family, to generating supplemental retirement income, to preservation of estate assets). Most of us have experienced significant changes in our lives, often completely unpredicted from just a few years earlier.

- Lifetime uses of life insurance require an enhanced level of understanding, assessment, and explanation in order to acquire the right type(s) of policy(ies) for specific financial, estate, and portfolio considerations. Policy illustrations are almost always an

considerations or risk and reward should be taken into account even when purchasing just one life insurance policy for lifetime uses.

- Purchasers of life insurance – or indeed those employing a strategy for any financial product – would be well served to match their investor "style" by choosing an advisor with complementary skills and behaviors. Advice is generally the element in which all investors have a common interest. Yet our grandmothers may have known the best advice of all: "Get and stay rich the old-fashioned way – saving and investing using good planning, advice, patience and diversification."

We conclude with our own observation that life insurance is the ultimate character builder. It takes a little out of the "enjoyment budget" today in favor of the secure knowledge that the economic future is more adequately assured. Some have suggested that it should really be called "death insurance," but this misplaces the true meaning of continuing economic viability for the life of the beneficiaries.

CHRISTOPHER H. HAUSE, FSA, MAAA, CLU
OVERLAND PARK, KANSAS

Chris is Chief Actuary and a principal in Ethical Edge Insurance Solutions, LLC and has also formed the firm Hause Actuarial Solutions, Inc. after serving as Managing Partner for William M. Buchanan & Associates. Chris has been a Fellow of the Society of Actuaries since 1986, and has been a Member of the Academy since 1980.

He earned a Bachelor's degree in Mathematics at the University of Wyoming in 1975.

Chris brings a unique blend of actuarial and management skills, having worked for insurance companies most of his career. His top-to-bottom knowledge of all functions of the insurance business brings quality and usability to all the projects undertaken by his firm.

Prior to forming Hause Actuarial Solutions, Inc., Chris was Senior Vice President and Actuary for Individual Assurance Company in Kansas City, Missouri for over 12 years. He served on the Board of Directors and the Investment Committee. He was the Chairman of the Long Range Planning Committee. IAC offers credit life and disability, group mortgage life and disability and term life through its client banks in the Midwest. It has a strong and profitable group life and interest sensitive payroll deduction operation in the Pacific Islands.

Chris' past work experience includes exposure to a broad range of products and distribution systems. Prior to IAC, Chris worked at Pyramid Life in Mission, Kansas; and Allianz Life (NALAC); and ITT Life in Minneapolis.

Chris is a member of several special interest sections of the Society of Actuaries and has served on the Council of the Marketing and Distribution Section and the Smaller Insurance Companies Section. He is a frequent speaker at SOA events and is a past President of the Kansas City Actuaries Club.

What is your expectation of the value of Portfolio B relative to Portfolio A at the end of 5 years? Or the value of Portfolio "C" relative to the value of Portfolio "B" at the end of 5 years. (Answers follow this section.)

Now let's shift this tutorial toward a variable life insurance policy example. Assume we have an 80-year-old male whose $1,000,000 policy account value is "on the curve"; that is, the account value of $393,822 (and net amount at risk of $606,178) at age 80 is sufficient at the 10% assumed rate of return to sustain the policy to age 100 with the net amount at risk reduced to "0" and the cash value equaling the death benefit. This is the so-called "endowment" scenario that, as earlier seen in Graph 1, actuaries recommend when calculating a sufficient policy premium for flexible premium policies.

For this example, we'll apply the three portfolio rate examples to the accumulation of account value from the end of age 80 to the end of age 85:

Year	**Portfolio A**	**Portfolio B**	**Portfolio C**
1	10%	10%	-10%
2	0%	20%	30%
3	10%	0%	0%
4	10%	30%	20%
5	10%	-10%	10%
Policy Value			
Age 80	$393,822	$393,822	$393,822
Age 85	$441,072	?	?

Endnotes

1 *2006 Life Insurers Fact Book,* American Council of Life Insurers, Washington, D.C.

2 Bureau of Economic Analysis, U.S. Department of Commerce at www.bea.gov.

3 *2006 Life Insurers Fact Book,* American Council of Life Insurers, Washington, D.C.

4 *Life Insurance, 12th Edition,* pp. 18 – 45, Kenneth Black, Jr. and Harold D. Skipper, Jr., Prentice Hall 1994.

5 2001 Valuation Basic Table, Society of Actuaries "Report of the Individual Life Insurance Valuation Mortality Task Force," November, 2001.

6 *Life Insurance Consumer Studies,* LIMRA International.

7 *McGill's Life Insurance,* Edward E. Graves, Editor, The American College, 1994, pp. 305-306.

8 Net Present Value calculations use Age 33 as the starting point in all columns.

9 *2006 Life Insurers Fact Book,* The American Council of Life Insurers, Washington D.C.

10 Mutual life insurance companies reflect "profits" in operating costs through the contribution principle, defined by Black and Skipper as "the return to each class of policyowners a share of the divisible surplus proportionate to the contribution of the class to the surplus." In other words, policies of longer duration and higher total premiums paid will tend to earn more divisible surplus than more recently purchased, lower-premium policies.

11 *Revealing Life Insurance Secrets,* Richard M. Weber, Marketplace Books, 2005.

12 Insurance companies selling variable policies do so through Broker-Dealers who are members of the Financial Industry Regulatory Authority (FINRA). While all insurance companies are regulated by both their states of domicile and states in which they are admitted to sell their products, the marketing and sales practices surrounding the distribution of variable policies are regulated by the FINRA. An agent must be licensed by his or her state of domicile to sell life insurance *and* must be a Registered Representative with a Broker-Dealer for the sale of any securities-related insurance product.

13 Alan H. Buerger, "Life Settlements Come of Age," *Trusts & Estates,* November 2002.

14 Brian Brooks and Elizabeth Baird, "Clients May Hold Millions in Untapped Insurance Wealth, Study Finds," *On Wall Street,* November 2002.

15 Alan H. Buerger, "Life Settlements Come of Age," *Trusts & Estates,* November 2002.

16 Deloitte Consulting LLP and The University of Connecticut, "The Life Settlements Market: An Actuarial Perspective on Consumer Economic Value," 2005.

17 *Final Report of the Task Force for Research on Life Insurance Sales Illustrations under the Auspices of the Committee for Research* on Social Concerns, Society of Actuaries, 1992.

18 *Ibid.*

$1,000, increasing each year thereafter. For comparison (and somewhat coincidentally), our policy standards indicate that is exactly what a universal life policy, funded to endow at age 100, would cost annually. Our observation is that no one with any other option would choose to continue their term plan at renewal rates like these.

[30] *Rich Dad, Poor Dad*, Robert T. Kiyosaki, Warner Books, 2000.

[31] Federal Reserve Statistical Release, Selected Interest Rates at www.federalreserve.gov.

[32] *Ibid.* One-year T-Bills spiked in 1970 to more than 7%, but fell back to a more typical 3% in early 1972. The rest of the decade saw rates seesaw back and forth between 4% and 9% until starting their inflationary climb in earnest by Spring 1977. T-Bills peaked in June 1981 at 16.2% and began a declining trend that reached its lowest rate of 1.01% in June 2003.

[33] *U.S. Individual Life Insurance Sales Trends*, 1975-2006, LIMRA International.

[34] *2006 Life Insurers Fact Book*, The American Council of Life Insurers, Washington D.C.

[35] For example, the four major mutual insurance companies have strong financial ratings from A. M. Best Co., Moody's Investors Services, and Standard & Poor's. **Northwestern Mutual Financial Network** (A++, Aaa, AAA); **Guardian Life Insurance Company** (A+, Aa2, AA); **MassMutual Financial Group** (A++, Aa1, AAA); and **New York Life** (A++, Aaa, AAA). In addition they have similar agent-based distribution systems, and similar investment portfolio mixes.

[36] The term "Law of Large Numbers" is not a mathematical law in the strictest sense. However, the Law of Large Numbers generally refers to a statistical theorem that multiple observed values of a trial event will converge to its true underlying mean value as the number of trials becomes "large."

[37] Policy Standards are used to demonstrate how modern life insurance policies work without the distraction of one insurance company's non-guaranteed values projections versus another's. In particular, the Policy Standards attempt to:

1) Portray how today's UL and VUL contracts react to various investment/interest returns;
2) Measure funding adequacy;
3) Demonstrate the interdependence between funding level and policy performance;
4) Match a funding level with a confidence that the policy will sustain without lapsing.

It is important that an analysis of this type recognizes the following:

1) No particular company's policy can be used, as it may not be reflective of the entire industry at any given time;
2) All major carriers' experience for a given rate class and policy type will converge over time:
   a. Mortality experience will converge because the underwriting tools are similar
   b. Expenses will be more or less the same for all large carriers
   c. The need for margins is approximately the same;
3) The standards must be updated and tested periodically to reflect current policy design.

While certain companies will stress certain elements of policy cost over others, the total "package" of insurer mortality, expenses and margins over the life of a group of similar contracts will be similar: e.g., Company A's cost of insurance rates may be slightly higher than Company B's, whose expense charges are slightly higher than Company A's.

[43] Assumptions: 45-Male in good health; $200,000 current investment portfolio invested in Mutual Funds with a pre-retirement investment goal/risk tolerance of 8% (4% taxable, 3% realized capital gain, 1% unrealized capital gain) and a post-retirement investment rate of return objective of 5%; Tax rate is 30% (paid out of income, not investment account); long-term life insurance is estimated at $500,000; Life expectancy is 84.

In both approaches, the consumer considers allocating a total of $15,000 a year into one or the other scheme to better appreciate how best to achieve his goals. In the BTID strategy, cash flows will consist of the $865 yearly term premium and the balance of $14,135 a year into the investment fund. Income and capital gains taxes will be assessed and paid directly from the investment account. These taxes range from $3,533 for year 1 to $19,539 by year 20. In the "buy whole life" strategy, $9,550 is paid each year for a $500,000 whole life policy and the $5,450 balance is invested in an investment fund with the same assumptions as the BTID.

[44] The exclusion ratio for this example is .5081, resulting in approximately half of the annuity payments taxed at ordinary income tax rates (30% assumed).

[45] Virtually all investments – fixed or equity – will have quantifiable risk as to asset value and/or yield volatility over time. For life insurance, the volatility factor is an estimate of the annual volatility in the assets backing the reserves of the various policy types considered. The annual volatility measure selected is the standard deviation in recent historic returns of those underlying assets.

While we recognize that non-investment components -- mortality and expense experience – will also affect the actual policy performance of the participating whole life and variable universal life plans, we choose to focus on the investment component alone rather than attempt to reflect these additional risk factors (i.e. the possibility that longer life expectancies might suddenly reverse the trend that has been observed for the last 50 years) for purposes of this analysis.

It is consistent with other work that we have done to assume that large blocks of similarly underwritten policies – by so-called "peer" insurance companies – can be expected to achieve similar mortality experience over time. While mortality experience studied by the Society of Actuaries has demonstrated that mortality experience between even large blocks of business and between companies can vary, there is no way to capture or measure that volatility for purposes of this analysis.

Similarly, it is our contention that the expenses of policy administration are quite consistent among the major "peer" carriers and can be expected to be reasonably predictable in the future. While we recognize that variable universal life may be more expensive to administer in practice, that additional expense is assumed to be reflected in the policy loads, and not a matter of future variability.

For purposes of this analysis, the universal life with a lifetime secondary guarantee is assigned a risk factor of zero. Again, this is reflective of the variability in the non-guaranteed elements of the contract (none, relative to the face amount).

The annual standard deviation in investment grade fixed instruments has been approximately 3% over the past 40 years. To assign a risk factor to a participating whole life, we separate the policy into its guaranteed and non-guaranteed face amounts at life expectancy. From Table 12, the guaranteed portion of the death benefit is $50,000,000, or approximately 40% of the total $124,428,350. The non-guaranteed portion is the other 60%. 60% of the 3% standard deviation produces an overall standard deviation of 1.8%. We use the value of 1.8 to reflect this standard deviation.

Growth:	Investors who have a preference for growth and who can withstand significant fluctuation in market values: 70% stock (60% domestic / 10% foreign) 25% Bonds 5% Short-term investments
Aggressive Growth:	Investors who seek growth and who can tolerate wide fluctuation in market values, especially over the short term: 85% stock (70% domestic / 15% foreign) 15% Bonds 0% Short-term investments

[51] A similar analysis was employed with the use of Par WL, UL, NLG-UL, and VUL with similar risk characteristics for the non-guaranteed portion of a policy. The life insurance policy values used in this section are Par WL, which produced the best projected results of the various policy styles.

[52] "Asset Allocation: Balancing Financial Risk," Third Edition, by Roger C. Gibson, McGraw Hill, 1996; page 8.

[53] 33-M-NSP

[54] The linkage of the accumulation of cash value and the potential for increasing death benefit over time exists in Participating WL because of the possibility that the insurer's investment return above its cash value guarantee will provide an opportunity for a declared dividend, which in turn spawns the purchase of paid up additions and increased Death Benefit. Universal life (both traditional and variable) may experience increased death benefits due to IRC Sec. 7702. This Section requires an age-based ratio of death benefit to cash value, and when policy cash values approach the death benefit, the required "corridor" of death benefit will rise accordingly. Unlike participating whole life, however, when the underlying asset value of the sub-accounts decline in a "down" market, previous death benefit increases may reverse back to the stipulated policy amount, since "corridored" death benefits fluctuate with the account (cash) value.

[55] *Segmenting Today's Investors*, Bill Doyle, Forrester Research, March 31, 2006.

[56] *ibid.*