PRUDENCE AND SUITABILITY: ESTIMATING THE VALUE OF TRUST OWNED LIFE INSURANCE

INTRODUCTION

Uniform Prudent Investor Act

The amendment of the Probate Code through the adoption of the California Uniform Prudent Investor Act[1] presents several challenges to trustees of irrevocable life insurance trusts. The Restatement (Third) of the Law of Trusts, which underlies the Act, establishes "principles of prudence" against which the actions of the trustee may be evaluated. Thus, in addition to the traditional duties of loyalty and impartiality, the third restatement enumerates the principle that

> *Risk and return are so directly related that trustees have a duty to analyze and make conscious decisions concerning the levels of risk appropriate to the purposes, distribution requirements, and other circumstances of the trusts they administer.*[2]

Some states that have adopted Prudent Investor Standards have statutorily exempted life insurance trusts from the full range of the "principles of prudence."[3] It may be argued that, lacking such exemption, trustees may incur liability for breach of trust if adequate selection, monitoring and retention criteria are not present in their trust administration. Absent specific written guidelines for trust administration and asset management, it remains unclear how courts will assign responsibility for future insurance contract underperformance. In most instances, it is the grantor who selects the insurance program and who directs the trustee to include it in the trust estate. However, with trusteeship comes a duty to monitor and review the trust assets in order to determine that they remain prudent and suitable.

Some authorities argue that, even with written policy guidelines, under Probate Code §16049 the failure to evaluate critically may result in liability:[4]

> *Within a reasonable time after receiving a trusteeship or receiving trust assets, a trustee shall review the trust assets and make and implement decisions concerning the retention and disposition of assets, in order to bring the trust portfolio into compliance with the purposes, terms, distribution requirements, and other circumstances of the trust, and with the requirements of this chapter....*

"Strict Constructionist" interpretations call into question the viability of some of the more traditional methods of defense against liability:

> *Special relation asset statutes and exculpatory language do not alleviate the trustee from the duty of loyalty. Prudence dictates that the trustee conduct surveillance in order to determine that he is not investing in "wasting assets," and that, if economic circumstances change, prudence may dictate that the trustee seek to modify unfavorable trust provisions when the failure to seek such modification would itself be imprudent.*[5]

Currently, the topic of trustee liability for insurance policy selection elicits at least three points of view:

1) The trustee has little or no liability for the grantor's selection of the policy;[6]
2) The trustee may have liability but there is little or no determination of the degree in existing case law;[7] or,
3) The trustee incurs liability for the insurance policy selection decision unless statutorily exempted from such liability.[8]

Irrespective of how courts apportion fiduciary liability, all parties to the insurance purchase decision benefit from impartial analysis that is economically reasonable, academically defendable, and financially enlightening. Fortunately, the financial analyst profession provides clear, generally accepted standards both for the valuation of fixed income instruments with uncertain payment schedules and for the assessment of the contribution of such instruments to a client's financial objectives. When the analytical techniques of Modern Portfolio Theory are brought to bear on life insurance policy selection and retention issues, the trustee will have the objective data to establish written policy and to communicate risk and return probabilities to the grantor and trust beneficiaries. Equally as important, the trustee will have documentation of compliance with the provisions of the Uniform Prudent Investor Act's requirements, will have a method for ongoing surveillance and monitoring of insurance policy assets, and will have a more defensible position in the event of future litigation of insurance-related issues. The fact that the analytical techniques which are the quantitative underpinning of Modern Portfolio Theory are commonly used in the investment advisory profession, makes their timely adoption by trustees of family trusts more vital.

Basic Principles of Insurance

For the most part, trust-owned life insurance contracts provide for long-term insurance protection. The purchase decision is complex for a number of reasons:

- The variety of products available to provide long-term benefits;
- The number of companies offering coverage;
- The nature of evidence offered by company sales representatives regarding historical performance,

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financial strength, projected values, etc.,

- The lack of a readily understandable methodology for contract evaluation.

Consumers (and their professional advisors) venture into this complex world with understandable trepidation. Therefore, it is useful to remind ourselves that an insurance contract is a mechanism for distributing *losses*. As Kenneth Black, Regent's Professor Emeritus of Insurance and Harold Skipper, C.V. Starr Distinguished Professor of International Insurance at George State University write:

> *The function of insurance is to safeguard against misfortunes by having the losses of the unfortunate few paid by the contributions of the many who are exposed to the same peril. This is the essence of insurance—the sharing of losses and, in the process, the substitution of a certain, small "loss" (the premium payment) for an uncertain large loss.*[9]

If you are asked to consider the merits of acquiring or transferring an insurance contract to an irrevocable trust either for intergenerational wealth accumulation purposes or for prefunding of estate tax liabilities, critical decisions should be made within the context of these first principles. Trustees are under the obligation to:

1) Manage the funds of the trust as a prudent investor would;
2) Exercise reasonable care, skill and caution; and,
3) Incorporate risk and return objectives reasonably suitable to the trust.

Given the above-listed fiduciary responsibilities, trustees should place a burden of proof on those who recommend the inclusion of insurance coverage within the trust estate to demonstrate that their suggestion is both prudent and suitable. Life insurance contracts, in the estate-planning context, are important tools for hedging against inadequate survivor income or against forced liquidation of non-marketable assets. Like all hedge instruments, however, life insurance has a cost. The buyer must determine the value of the hedge both in terms of its effect on risk/reward tradeoffs and in terms of its financial (portfolio) impact on the economic circumstances of both premium payer and heirs.

If the rationale for suggesting life insurance is other than within the framework of a hedge against unacceptable losses, the burden of proof may be especially heavy. This is because the statistically expected value of a life insurance contract is *negative*.[10] To believe otherwise means that you either consider insurance companies to be charitable institutions or that you believe that insurance companies invest in capital markets not available to other institutional investors such as pension funds, endowments and mutual fund companies. Quite simply, on either a pre- or post-tax basis, it is difficult to demonstrate the absolute superiority of life insurance as a wealth accumulation vehicle or as a reasonable instrument for the pre-funding of future debt obligations. Absent such demonstration, however, the trustee may have exposure to litigation from a disgruntled remainderman beneficiary.

Structure of the Analysis

The analysis of insurance contract value is designed to meet the statistical and quantitative analysis standards that underlie Modern Portfolio Theory and, hence, the California Uniform Prudent Investor Act. In order to enhance readability, discussions regarding the more technical aspects of quantitative analysis are relegated to the footnotes. Even a brief glimpse of the footnote materials, however, should convince the reader that the evaluation of an insurance contract is not merely a buy-term-and-invest-the-difference exercise in numbers crunching. More appropriate and academically sound valuation models have, to a great extent, superceded the term-plus-invested-difference analytical methodology, first invented in 1927 by Alfred Linton.

The article avoids the more advanced insurance valuation models that are the subjects of current academic research. This includes discussion of option theory and the stochastic calculus that applies to valuation of derivative instruments. Likewise, for the most part, it avoids discussion of analytical techniques that require extensive simulation modeling. The analysis is intended to pass muster in the sense that it is doable by a trustee familiar with how an insurance contract works, familiar with computer spreadsheet programs, and familiar with Modern Portfolio Theory.

Upon examination, it can readily be seen that a life insurance policy is not a good candidate for 'equation-oriented' methods of valuation... Rather than a deterministic valuation process, a life insurance policy lends itself to a stochastic valuation process.

CALCULATING THE VALUE OF A LIFE INSURANCE CONTRACT

A life insurance policy (with the exception of variable life policies) is a fixed income instrument. The value of a fixed income instrument such as a US Treasury bond can be mathematically calculated in a deterministic fashion. The generally accepted methodology for such a calculation is to create an equation that sums the known future cash flows (coupons plus maturity value in the case of a US treasury bond) with each cash flow discounted by an appropriate interest rate. The current value of the fixed income instrument is the sum of the discounted future cash flows.[11] We can also calculate the interest rate that brings the current price of the fixed-income instrument into equilibrium with all known future cash flows. This calculation tells us the investment's internal rate of return.[12]

Methods that require solutions to equations are deterministic. Deterministic methods of calculating the value of a fixed income instrument are valid under two conditions:

- the timing and amount of all future cash flows must be known; and,
- the risk of payment delay or default either must be non-existent or must be accurately reflected in the rate(s) at which future cash flows are discounted.

Upon examination, it can readily be seen that a life insurance policy is not a good candidate for 'equation-oriented' methods of valuation. The terminal payment of a life insurance contract may result from surrender (lapse) of the policy or from the death of the insured; and, neither date can be known with precision. Not only may the timing of the terminal payment be uncertain, but the magnitude of payment may also fluctuate because of non-guaranteed dividends or interest credited to policy cash surrender values, death benefits, or both. Finally, the "investment" in the contract may vary if projected premium schedules do not generate sufficient value to keep the contract in force. Rather than a deterministic valuation process, a life insurance policy lends itself to a stochastic valuation process.

Stochastic methods of valuation are probabilistic in nature. That is to say, the evaluation of a financial instrument such as a life insurance contract must take into account the probability, timing, risk, and magnitude of all cash flows (premiums plus benefits).[13] The evaluation of a life insurance contract encompasses both the statistically expected value of the insurance policy and the probability-adjusted variance therefrom. The statistically expected value is a point estimate: the most likely value of the policy; the probability-adjusted variance is a range estimate: the degree to which actual results may deviate from expected results. Upon clarification of the likely range of future values, we can compare the insurance plan to alternative methods of providing future funds.

Life Insurance Policy Illustration

Rather than provide an abstract discussion of evaluative methodologies, we motivate an understanding of the topic through an analysis of a survivor life (second-to-die) insurance program. The purpose of the program is to provide money to pay future estate tax liabilities at the second death. The inquiry into the question of policy suitability begins with a review of policy illustrations provided by the carriers:

Each insurance proposal illustrates a survivorship life contract and assumes:

- A face amount (death benefit) of $1,000,000;
- A preferred rate (non-smoker) with the joint issues ages of fifty-five (male) and fifty-five (female).

The XYZ Life Insurance contract is a Second-To-Die Universal Life Contract. The underwriter currently enjoys favorable rankings from the major independent evaluation firms charged with evaluating the company's financial condition. The illustration has an annual premium schedule of $7,956.00 payable for the lifetime of the insureds. The insurance program contains sales "loads" in order to compensate the insurance agent.

The ABC Life Insurance contract is also a Second-To-Die Universal Life Contract. The underwriter currently enjoys favorable rankings from the major independent evaluation firms charged with evaluating the company's financial condition. The illustration has an annual premium schedule of $8,743.00 payable

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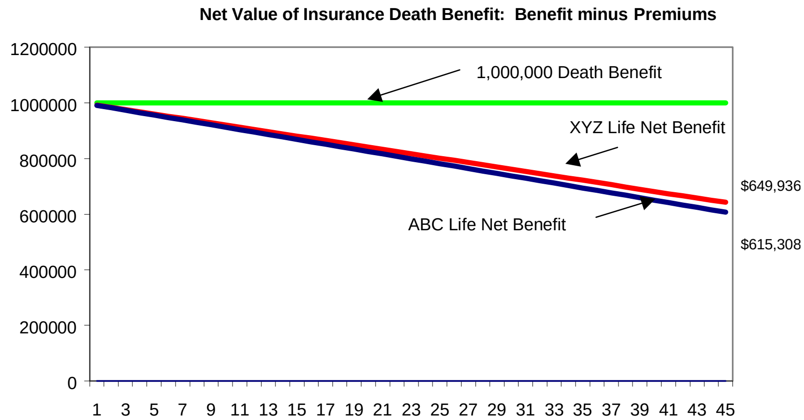
for the lifetime of the insureds. The insurance program is "no load" in that there are no commissions payable to an agent upon policy sale.



Neither illustration guarantees the projected benefits or projected premium costs. Each illustration, however, provides a table of guaranteed values. The guaranteed values assume crediting of a minimum level of interest (4%) and assume deductions of the maximum allowable charges for insurance protection and administrative costs.

Projected values of each insurance policy illustration are depicted graphically, above. The depiction shows the gain (death benefits less premiums paid) assuming that the projected costs and benefits are accurate.

Of course, no illustration of the prospective performance of a financial product over 20 to 30 years can hope to succeed as an exact prediction. The actual performance of the insurance programs will certainly stray from the illustrated values, with the lower limit of performance set by the guaranteed values. When policy performance is projected using the guaranteed value schedule, the XYZ policy lapses with no value in year 25 (joint age 80); and, the ABC policy lapses with no value in year 26 (joint age 81).

Estimating Insurance Cost

The first step in evaluating the value of insurance to the estate is to estimate the cost of acquiring and maintaining coverage. We utilize the method of discounted cash flows commonly employed in capital budgeting decision analysis. This method recognizes that, because money has a time value, a dollar of current income or expense has greater value than a dollar of future income or expense. Future cash flows are, therefore, discounted in order to equate them to the current value of money.

The example at hand assumes a discount rate of 7%. A discount rate of 7% assumes that if you had retained the premiums for other investments, your rate of return on the alternate investments would equal 7%. Therefore, the discount rate equates to your "opportunity costs" for forsaking alternative investments.[14] Total net present value of projected premium costs for the insurance programs are:

- XYZ Life: $108,246
- ABC Life: $118,953.

The above amounts represents the total cost of projected present and future premiums in today's dollars.

The present value cost calculations assume that the premium schedule projected by the insurance carrier is reasonable. To the extent that critical inquiry does not support the validity of this assumption, present value costs must be modified. We resume discussion of the validity of the vendor-supplied cost projections at a later point.

Estimating Rate of Return: Internal Rate of return Analysis

Every insurance premium payment involves a trade of current dollars for benefits that will be received at some unknown future date. Although an early death means a windfall return to the beneficiary, the converse is also true. Occasionally, a vendor seeks to demonstrate an insurance contract's merit by calculating a measure of value known as the Internal Rate of Return (IRR). The IRR is the rate at which money committed to the insurance policy (and remaining in the policy) compounds. As such, IRR is comparable to the rate earned on a savings account. If your heirs receive an early death benefit after payment of only one or a few of the scheduled premiums, the IRR will be very high. If your heirs must wait many years to receive policy

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A net present value analysis may demonstrate that, if the receipt of benefits is delayed too long, their future discounted value will be less than the present value of the premiums which you pay. That is to say, if you live too long, the contract will have subtracted value from your estate.

proceeds, the interest rate that equates premiums paid to benefits received will be lower.

We include an IRR calculation only because of the propensity of insurance vendors to employ this valuation measure. With respect to a life insurance policy, the measure is *inappropriate* because it ignores both the scale of premium commitment as well as risk of future contract lapse due to underperformance (to a great extent there is an *inverse* relationship between a high IRR and the cash-value base upon which the contract depends for its future integrity). Manipulations of premium inputs and time horizons can sometimes lead to spurious conclusions.

For example, a reduction in scheduled premiums will enhance the death benefit IRR. However, premium reduction increases the risk that the policy will lapse in the future because of insufficient cash value. The increased lapse risk is not captured by the internal rate of return calculation. Indeed, this position was reinforced in the 1985 report of the Yield Index Advisory Committee of the National Association of Insurance Commissioners when they stated that calculating a death benefit internal rate of return in order to determine the value of a life insurance contract was misleading to the consumer. [15]

Nevertheless, selecting age 85 as a benchmark comparison point, the IRR's of the insurance programs are as follows:

- XYZ Life: 7.71%
- ABC Life: 7.23%

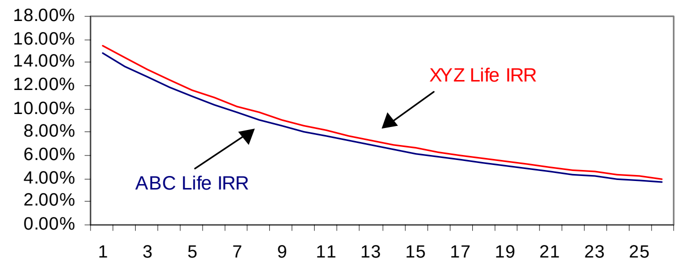
The graph (above) highlights the comparative IRRs through age 99.

Postponement of the second death beyond age 85 significantly lowers the projected internal rate of return. By age 99, the IRR drops to 4% and 3.66%, respectively. Life Insurance purchase decisions should never be based on IRR calculations. Despite the fact that IRR calculations have current widespread use, they remain (as indicated above) inherently misleading.

Estimating Rate of Return: Net Present Value Cost Analysis

As long as aggregate premiums paid are less than the promised death benefit, the IRR

IRR Comparison: Year 20 through 45



calculation will generate a positive rate of return irrespective of the length of the planning horizon. A net present value ("opportunity cost") analysis, however, may demonstrate that, if the receipt of benefits is delayed too long, their future discounted value will be less than the present value of the premiums which you pay. That is to say, if you live too long, the contract will have subtracted value from your estate.

The table on the following page presents a net present value analysis of the two policies. Based on a 7% discount rate, *and* assuming that the values projected by vendor illustrations are reasonable, we conclude that the insurance policies under evaluation will begin to subtract value from the estate beginning at the following ages:

- XYZ Life: Age 87
- ABC Life: Age 86

The Net Present Value Cost is the discounted present value benefit of the insurance proceeds less the discounted present value cost of aggregate premiums paid. A negative number indicates that the value of insurance proceeds received in the future is less than the value of premiums paid.[16]

Probability of Negative Values to Heirs

Although each insurance company promises to deliver, upon death, a projected benefit, the net value to your heirs is the benefit less the premiums paid. As noted above, if you do not purchase the insurance, you have the opportunity to invest the premiums and the heirs will eventually receive the value of the investment contributions plus the earnings thereon. Additionally, because the year of the second death is unknown, an adjustment for the probability of a death in any future year must be applied to the net value of the insur-

Year	Age of younger spouse	Death Benefit (paid at end of year)	ABC Life Premium (paid at the beginning of the year)	Cumulative Net Present Value of All Cash Flows for ABC Life	XYZ Life Premium (paid at beginning of the year)	Cumulative Net Present Value of All Cash Flows For XYZ Life
1	55	$1,000,000	$8,743	$925,836	$7,956	$926,623
2	56	$1,000,000	$8,743	$856,525	$7,956	$858,047
3	57	$1,000,000	$8,743	$791,747	$7,956	$793,957
4	58	$1,000,000	$8,743	$731,208	$7,956	$734,060
5	59	$1,000,000	$8,743	$674,629	$7,956	$678,082
6	60	$1,000,000	$8,743	$621,751	$7,956	$625,765
7	61	$1,000,000	$8,743	$572,333	$7,956	$576,871
8	62	$1,000,000	$8,743	$526,148	$7,956	$531,176
9	63	$1,000,000	$8,743	$482,984	$7,956	$488,470
10	64	$1,000,000	$8,743	$442,644	$7,956	$448,558
11	65	$1,000,000	$8,743	$404,943	$7,956	$411,257
12	66	$1,000,000	$8,743	$369,708	$7,956	$376,397
13	67	$1,000,000	$8,743	$336,779	$7,956	$343,816
14	68	$1,000,000	$8,743	$306,003	$7,956	$313,368
15	69	$1,000,000	$8,743	$277,241	$7,956	$284,911
20	74	$1,000,000	$8,743	$159,312	$7,956	$168,233
25	79	$1,000,000	$8,743	$75,230	$7,956	$85,043
30	84	$1,000,000	$8,743	$15,280	$7,956	$25,730
31	85	$1,000,000	$8,743	$5,538	$7,956	$16,091
32	86	$1,000,000	$8,743	**-$3,568**	$7,956	$7,082
33	87	$1,000,000	$8,743	**-$12,077**	$7,956	**-$1,337**
34	88	$1,000,000	$8,743	**-$20,030**	$7,956	**-$9,206**
35	89	$1,000,000	$8,743	**-$27,463**	$7,956	**-$16,560**
36	90	$1,000,000	$8,743	**-$34,409**	$7,956	**-$23,432**
37	91	$1,000,000	$8,743	**-$40,901**	$7,956	**-$29,855**
38	92	$1,000,000	$8,743	**-$46,968**	$7,956	**-$35,858**
39	93	$1,000,000	$8,743	**-$52,639**	$7,956	**-$41,468**
40	94	$1,000,000	$8,743	**-$57,938**	$7,956	**-$46,711**
41	95	$1,000,000	$8,743	**-$62,891**	$7,956	**-$51,612**
42	96	$1,000,000	$8,743	**-$67,519**	$7,956	**-$56,191**
43	97	$1,000,000	$8,743	**-$71,845**	$7,956	**-$60,471**
44	98	$1,000,000	$8,743	**-$75,888**	$7,956	**-$64,471**
45	99	$1,000,000	$8,743	**-$79,666**	$7,956	**-$68,209**

ance benefit to arrive at the *expected* net value to your heirs. Few purchasers of insurance expect to "cash in" during the early years of their insurance purchase; and, insurance carriers will not issue coverage if there is a high probability of an early death.

When we overlay the net value of each insurance contract with the probability of a claim, we arrive at the *expected* value to the beneficiaries.[17] Although there is a possibility that a claim will occur during the early years of coverage, it is far more likely that the policy

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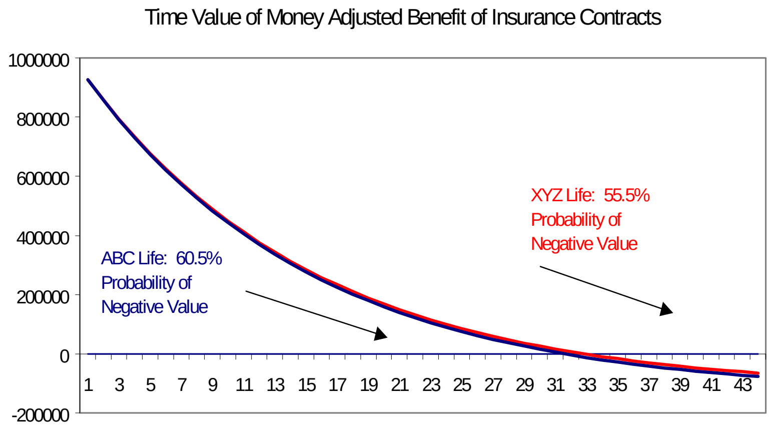
proceeds will not be collected until a date in the more distant future. For example, if both insureds died at the end of the first policy year, the net present value of the death benefit that would be received one year hence is $934,579. In order to receive this benefit, you had to pay a premium at the beginning of the year amounting to $7,956 (in the case of XYZ Life). Therefore, the net benefit to the beneficiaries equals [$934,579 - $7,956] $926,623. However, the probability of joint demise in the first year is so low that the probability-adjusted value of the death claim in that year is only $35. Thus, the expected value of the policy during its initial year equals [$35 - $7,956] -$7,921. The expected value of each policy taking into account cash flows in all years for both projected premiums and death benefits is as follows:

- XYZ Life: **-$2,211**
- ABC Life: +$1,232.

Finally, the probability that an insurance policy will subtract value from the estate is determined by calculating the probability that either insured will live beyond the age at which the policy's aggregate net cost exceeds the net value of its promised benefits.[18] For the policies under consideration:

- XYZ Life presents a 55.5% chance of a monetary loss
- ABC Life presents a 60.5% chance of a monetary loss.

It is important to note that the above calculations refer to many survivor life contracts issued at preferred non-smoker rates. No one, including insurance actuaries, can predict actual results for a specific policy. Thus, expected value and probability of gain or loss refer to the average results of the entire population of insureds and not to any one policy. This is another way of saying that if you live a long time you don't stand to gain as much from a life insurance policy as if you were to die early. By its nature, life insurance is designed to protect against an early death. Thus the fact that the policy begins subtracting wealth from an estate (for this case, in the mid 80s) is not an argument for avoiding the purchase of insurance.



The graph (above) depicts the period of time during which the policies under evaluation add or subtract value. Additionally, it illustrates the magnitude of possible additions and subtractions under both cases.

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Liquidity Risk

The risk of an insurance contract must also take into account the possibility that the premium payer will be unable or unwilling to continue the premium payment schedule. We account for this risk by assuming that the policy will be returned to the insurance company in a future year for its full net surrender value. Changes in economic circumstances, tax law changes, or other unexpected developments often prompt policyholders to discontinue their insurance programs. To the extent that a future policy surrender results in a return of cash with a net present value less than the net present value of the sum of premiums paid, the premium payer suffers an economic loss. The loss is defined as "liquidity risk" and its magnitude is determined by application of a vector of assumed lapse rates.

Lapse rates for insurance policies have traditionally been very high: 9.8% per year for all forms of life insurance in 1994. Indeed, the approximately $100 billion in surrender benefits and other fund withdrawals is far higher than the amount paid to policyholders for death benefits. A lapse ratio of only 3% means that only 56% of insurance policies will remain

The test is not a prediction about or projection of how any company's contract will actually perform in the future. Rather, it provides an actuarial benchmark against which company-generated illustrations can be compared.

in force after 20 years.[19] We project, on a net present value basis, the following liquidity risk for each policy:

Estimate of Liquidity Risk

	End of Year One	End of Year Five	End of Year Ten
XYZ Life (load)	$7,436	$16,188	$14,899
ABC Life (no load)	$0	$582	$3,344

To the extent that the policy under evaluation has a significant liquidity risk, the rate of return calculations should be modified to reflect the true economics of the transaction. Liquidity risk subtracts from the value of the insurance contract; and, all things equal, the contract with the lower liquidity risk is better for the insurance buyer.

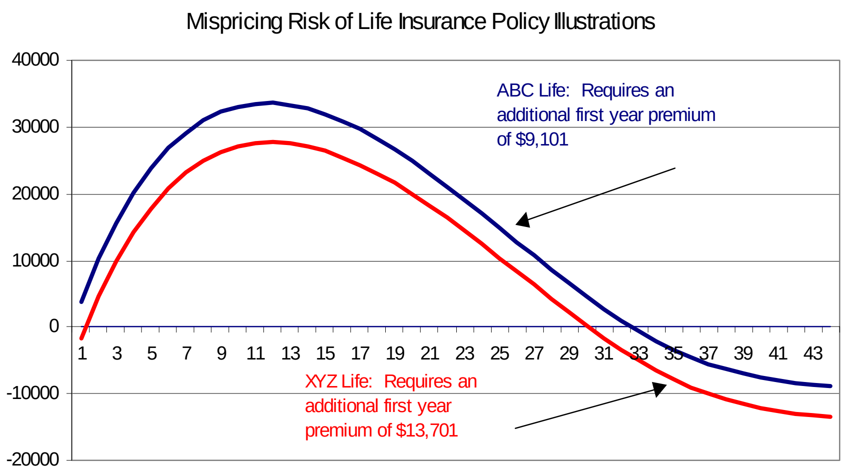
CREDIBILITY OF POLICY ILLUSTRATIONS

The trustee's analysis will, to a great extent, be based on illustrations provided by life insurance companies. Illustrations are financial documents prepared by the product vendor. We conduct an independent test of the reasonableness of an illustration's projected values given (1) investment conditions prevalent on the date at which the test is made; and (2) lapse, mortality and expense assumptions approximating industry norms and appropriate for the type of policy under examination (load or no-load / whole life or universal life, and so forth). The test is not a prediction about or projection of how any company's contract will actually perform in the future.[20] Rather, it provides an actuarial benchmark against which company-generated illustrations can be compared. The goal of the test is to help determine the relative credibility of an illustration as opposed to predicting the actual performance of any given contract.

Insurance illustrations provide a "static" picture of policy performance when, in fact, the actual values to be generated by the contracts depend on "dynamic," i.e. changing future market conditions. Although values projected beyond twenty years are problematic at best, projected comparisons against an actuarial benchmark are useful in that they provide a measure of an insurance contract's long-term vulnerability to actuarial mispricing risk. We measure actuarial risk by subtracting the net present value of the expected contract benefits (surrender benefits for lapses and death benefits for claims) from the net present value of expected premium cash flows (adjusted for deaths and surrenders as well as for assumed contract expenses).[21] In this case, under static investment market conditions, the analysis delineates the following surplus or shortages in contract funding:

- XYZ Life: -$13,701
- ABC Life: -$9,101.

The possibility of a shortage in contract funding heightens the probability that the insurance program will require additional premiums beyond those listed in the policy illustration; or, that coverage will lapse at a future date with all values lost to the heirs. The graph below depicts the magnitude of possible shortages or surpluses as well as the year in which possible shortages may result in contract lapse or in the need for additional premiums.[22]



The additional premium inputs can, of course, be made entirely in the first year or may be amortized over a longer planning horizon. In any event, failure to provide suitable funding may result in either unmanageably

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large future premium obligations or in the lapse of coverage with the loss of all value.

Given the need for additional premiums, the economic impact of implementing the insurance plans at the increased premium levels is as follows:

Contract	Present Value Cost of Premium Obligation	Age at which Policy begins to Subtract Value from the Estate	Probability of Negative Values to the Heirs
XYZ Life	$121,050	Age 86	60.5%
ABC Life	$127,459	Age 85	65.2%

Both programs have a high probability of a substantial amount of additional premiums in order to maintain the ability to deliver the promised future benefits.[23] Although there is no clear "winner" in the comparison, there is a substantial liquidity risk for the XYZ Life policy. Both contracts should provide positive values for beneficiaries through the insureds' mid 80s. If either spouse lives beyond this age, however, the heirs may find that they would have been better served through non-insurance alternatives.

PRE- AND POST-TAX CALCULATIONS

It is well beyond the scope of this study to consider the complex issue of wealth accumulation through insurance vs. alternative investments. If one has the interest, it is not difficult to compare the year-by-year statistically expected value of an insurance contract against the statistically expected value of an investment alternative. Additionally, the analyst can determine downside risk by comparing the guaranteed value numbers from the insurance policy illustration to the downside risk of the historical (or simulated) distribution of investment returns at two or more standard deviations. Likewise, upside wealth creation possibilities will compare the receipt of the death benefit with the distribution of investment returns at the upper bound of their statistical distribution.

The long-term outcome of such an analysis is sensitive to tax effects; and, it is sometimes claimed that the tax-advantages of life insurance policies outweigh the disadvantage of high costs. In order to test this assumption, the analysis uses historical data for the S&P 500 stock index in order to establish a comparative wealth accumulation benchmark. It assumes that the S&P 500 investment is owned by an irrevocable trust. The period under evaluation starts on January 1, 1973 (near the beginning of the OPEC Oil Embargo recession) and continues through December 31, 1995. Thus, the investment benchmark begins at the least favorable time in recent history and omits the spectacular growth during the 1996-1997 time period. Dividends and capital gain distributions are received, in cash, each year with the net amount remaining after taxes reinvested. A final liquidating capital gains tax liability representing tax on the difference between market value and accumulated tax basis is also calculated due to the fact that the trust cannot receive the step-up in tax basis accorded to assets owned directly be a decedent. Although capital gains and individual tax rates varied throughout the period, we assume a constant 28% tax rate on capital gains and 39.6% rate on ordinary income. The net after-tax rate of return of the investment over the 23-year planning horizon amounts to 8.87%.[24] Although the analysis generates results in tabular format, to conserve space, we have not presented this large table.

The methodology selected for calculation of the yearly after tax returns on an S&P 500 investment parallels the format developed by Ghee & Reichenstein.[25] Alternative after-tax calculation methodology is found in the model developed by Siegel & Montgomery. Fortin & Michelson divide mutual funds into ten categories according to their investment objectives. Utilizing the tax rates in the Siegel / Montgomery study, they evaluate the after tax return of mutual fund investments in each category over the period January 1, 1976 through December 21, 1993. The mean after tax return for all mutual funds during the period under evaluation was 10.50%; and the after-tax return for the category most comparable to the S&P 500 (Growth/Income and Equity/Income) was 10.81%. Although these returns are reported net of transaction costs and fund expenses, tax on accumulated gain over basis was not calculated.[26]

In the model used in this analysis, portfolio turnover rate is constant at 5%. This assumption compares with the Vanguard S&P 500 Index Trust with a turnover ratio of approxi-

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mately 4% and to the DFA U.S. Large Company portfolio with a turnover ratio of approximately 2%. With regard to capital gains tax, in years of share price depreciation, the tax is "negative"—i.e. the investor can use the loss to offset other tax liabilities. The "negative" tax liability is a positive amount that is reinvested. The reinvestment is, therefore, the tax subsidy allowed for realized losses. For years in which the share price appreciates, the reinvestment is also a positive number, but it is the amount of net gain after payment of tax.

The major point of the analysis is to demonstrate that any attempt to prove the superiority of insurance as a vehicle for long-term wealth accumulation should utilize an after-tax rate of approximately 9%. Given the current low crediting rates on interest-sensitive insurance contracts, and given the high expense factors associated with implementing an insurance program, it may be difficult to demonstrate that the insurance program has value beyond its use as a hedge-against-disaster instrument.

CONCLUSION

Given the swirl of legal controversy currently surrounding the life insurance industry, trustee reliance on insurance-company-generated information regarding life insurance policies may not be tenable. Likewise, depending on an agent for assurance that a policy is (or remains) prudent and suitable to the needs of a trust is problematic.

The Act, effective January 1, 1996, has no grandfather provision. The trustee can ignore the implications of the California Uniform Prudent Investor Act and hope that he escapes fiduciary liability for underperforming insurance contracts. Alternatively, the interests of trustees, grantors and trust beneficiaries can be enhanced by an objective analysis of the consequences of the insurance purchase decision. It is equally important to document the reasons for inclusion or exclusion of insurance into the trust estate to verify the procedural prudence of the decision making process.

Ultimately, questions of value are subjective. Although *cost* can be estimated with a considerable degree of precision, there is no objective measure of an insurance program's *value*. Rather, the appropriateness of insurance, like any financial instrument, can only be determined within the portfolio context. Conceivably, within the context of a highly illiquid estate, even an insurance program with a low or negative expected present value, may be attractive because of its properties as a hedge instrument. Given the legal environment of the Prudent Investor Rule, evaluation of the risk/return characteristics of the insurance program within the context of client's economic circumstances and objectives is vital. Insurance, within the context of planning for payment of future estate transfer liabilities represents only one of several financing alternatives. Acceptable standards of analysis should consider the broad range of available alternatives. In order to achieve a high degree of integrity, the analysis should incorporate the principles of Modern Portfolio Theory.

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[1] Probate Code §§16045 et seq.

[2] Restatement (Third) of Trusts, § 227.

[3] Annotated Code §15-166 State of Maryland: ...the duties of a trustee regarding the acquisition, retention, or ownership of a contract of insurance on the life of the grantor of the trust...do not include a duty to (1) Determine whether any contract of life insurance in the trust is or remains a proper investment; (2) Diversify the investment; or, (3) Exercise any policy options, rights, or privileges available under any contract of life insurance in the trust....

[4] Hartog, J. A. & Sanderson, P., "A Trustee's Crime and Punishment: Managing Fiduciary Liability Under the California Uniform Prudent Investor Act," California Trusts And Estates Quarterly Vol. 4 (Summer, 1998), p. 5.

[5] Raskin, J. D., "Some Observations on Compliance With the California Prudent Investor Act," Estate Planning & California Probate Reporter Vol. 18 (October, 1996), p. 34. See, also Bertles, J. B. & Yudenfreund, J. H., "Limiting Fiduciary Liability for Investing in Life Insurance," Journal of Taxation of Investments Vol. 11 (Spring, 1994), p. 246: "The standards set forth in the Restatement Third apply to investments in life insurance....A trustee generally must comply with mandatory provisions of a trust, and compliance should protect a trustee from liability. If compliance may be contrary to the purposes of a trust, however, a trustee may be under an affirmative duty to apply to a court for authority to deviate from the terms of the trust agreement."

[6] See, for example, Fidis, M.C., "Fiduciary Liability Concerns In Irrevocable Life Insurance Trusts," Fiduciary Duties and Liabilities, The Maryland Institute for Continuing Professional Education of Lawyers, Baltimore, MD (May, 1996), p. C-04: "Frequently, the grantor may have already previewed and approved a policy prior to the establishment of the trust. If this is the case, then even though the trustee applies for the policy and the final decision to purchase the policy legally resides with the trustee, the trustee's liability for the initial policy selection and purchase may be substantially lessened or eliminated since presumably, the purchase of the policy selected by grantor is consistent with grantor's intent and purposes of the trust."

[7] See, for example, the series of yet-to-be-determined-questions

posed by Rief, Frank J., "Life Insurance 'Time Bombs,'" The Audio Estate Planner, ALI-ABA Vol. 13 (Winter, 1996-97).

[8] See, for example, Seidel, Frank, "Fiduciary Responsibilities of a Trustee," Presentation to the San Francisco Chapter of the International Association of Financial Planners (March, 1996), p. 18: "The role of an insurance trustee is not a passive one. Should I not be concerned about the company that writes the policy? What if they go belly up. It's happened before. Will I get sued even though it was the Settlor who chose the Insurance Company...Was it not the trustees job to make the decision and to select the Company in the first place? Should have been."

Several articles advance the proposition that given the Third Restatement's incorporation of modern investment theory practitioners and courts will rely, in part, on the body of ERISA case law. Under ERISA, courts have determined basic definitional questions regarding who is a fiduciary, the nature of prudence, the duties of diversification, and so forth. These arguments, combined with case law surrounding the anti-delegation provisions of ERISA, indicate that trustees may have exposure for asset selection/retention decisions. See, for example, Hartog & Sanderson, Op Cit., p. 6: "...a trustee who fails to seek advice with respect to matters about which the trustee lacks skill or knowledge may be liable for failure to exercise proper care in making an investment."

[9] Black, K. & Skipper H. Life Insurance, Twelfth Edition, Prentice Hall (Englewood Cliffs, NJ), p. 18.

[10] This article shows a no-load contract with a positive expected value. This result however, is obtained prior to the actuarial adjustments required to restore credibility to the policy illustration. "Expected value" is a statistical term and, in the context of this article, refers to the expected (probability-adjusted and risk-adjusted) cash flows from premiums, death benefits and surrender payments. The high back-end loads that reduce policyholder cash surrender values below the actual value of accumulated policy reserves create a tontine effect. This means that, in some cases, policyholders that retain coverage on a long-term basis are subsidized by lapsing policyholders. Lapse supported policy design means that the "surviving" group of policyholders will have positive expected values. Taking into account all cash flows, however, state regulators will not permit sale of insurance products with positive expected value simply because they do not wish the carriers to become insolvent. See, Black & Skipper Op. Cit. p. 135.

[11] Sharpe, William F. & Alexander, Gordon J. Investments (Fourth Edition) Prentice Hall, 1990, pp. 461-462.

[12] Internal Rate of Return is the discount rate which makes the net present value of all cash flows equal to zero. Higgins, Robert C. Analysis For Financial Management (Fourth Edition) Richard C. Irwin, Inc., 1995, p. 249.

[13] Hiller, Randall S. & Schaack, Christian, "A Classification of Structured Bond Portfolio Modeling Techniques," The Journal of Portfolio Management (Fall, 1990), p. 37, classify problems as stochastic when "either the liability cash flows are uncertain, the asset cash flows are uncertain, or, in most instances, both."

[14] For financial analysts, the term "discount rate" has several dimensions. Among the common uses of the term are

1) the definition of discount rate as a function of risk—the required rate reflects the yield for financial instruments with comparable risk; [See, for example, Frank J. Fabozzi, Bond Markets, Analysis And Strategies, Prentice Hall (Englewood Cliffs, NJ., 1993), p. 21.] and,

2) the definition of discount rate as a function of opportunity cost. Opportunity cost, in turn, can be interpreted either as the rate of return available on an alternative investment opportunity, or, as the cost of borrowing funds in order to take advantage of an investment opportunity [See, for example, Robert C. Higgins, Analysis For Financial Management, Irwin (Chicago, 1995) p. 244].

Whereas alternative investments with long planning horizons have expected rates of return higher than the nominal risk free rate of 30 day T-Bills (approximately 5% at the time of this analysis), and whereas an insurance contract is not a risk-free investment, a discount rate in the range of six to eight percent is a reasonable place to begin an analysis. In a 1987 study of Universal Life rate of return, Cherin & Hutchins utilized a present value discount rate based on current interest crediting rate advertised by each insurance carrier. The discount rates were 'risk-adjusted' in the sense that carriers that took more portfolio risk to achieve higher crediting rates had the cash flows that were credited to the policyowners discounted at the higher rate. Cherin, Antony C. & Hutchins, Robert C., "The Rate of Return on Universal Life Insurance," The Journal of Risk and Insurance Vol LIV, No. 4 (December, 1987), pp. 691-711. The April, 1998 A.M. Best Universal Life Policy Report indicates that the median initial interest rate available on a universal life policy at the end of 1997 was 6.25% (p. 217).

We suggest that the discount rate is, in many respects, specific to each client; and, that the analysis used to determine the rate should parallel the commonly used methodology of capital budgeting decisions. The following table portrays some of the relevant considerations:

Capital Budgeting Decision Making Criteria	**Insurance Policy Purchases**
Nature of the Project (not the financial position or the cost of capital to the firm) determines discount rate	Purpose of the Insurance determines the discount rate: critical objectives include income replacement functions funded with pure protection; less critical objectives include insurance as a supplementary wealth accumulation vehicle or as a source of contingent future debt relief—i.e. estate tax payment.
Financing Method (Debt or Equity) impacts the value of the firm.	Payment of insurance premiums has an impact on the buyer's overall portfolio of assets. Utilizing cash for insurance premiums may mean that less risk can be assumed in the non-cash portion of the portfolio because cash reserves have been reduced. If, however, the cash utilized to pay premiums is "surplus"-i.e. not part of an asset allocation strategy, use for premiums impacts the ability to acquire additional investments and, therefore, impacts opportunity costs at the margin.

[15] NAIC Proceedings, Vol. I., 1986, p. 647.

[16] The National Association of Insurance Commissioners advocates the use of a measure called "Interest-Adjusted Surrender Cost Index" (IASC) in order to measure the relative costs of insurance policies. Most states require that the IASC value measure appear on insurance policy illustrations. In many instances, after long periods of time, policy illustrations show a negative IASC giving the impression that the insurance policy has a 'negative cost.' This result is unfortunate because the IASC value measure is intended only to provide the consumer with relative cost information regarding the pricing of insurance contracts. In this way, the consumer can more easily judge the costs of two or more competing insurance programs. The IASC was never designed to measure the value added to or subtracted from the consumer's wealth.

Financial economists, however, have long recognized that hedge instruments (options on securities, for example) will subtract value from a portfolio under a variety of circumstances. Likewise, an insurance contract, used to hedge future tax contingencies, will, under certain conditions, also subtract value. Throughout the 1980's, for example, Harold Schleef published a series of articles in academic journals on his research into this issue. Briefly, Schleef points out that traditional cost/benefit measures of insurance value such as the IASC are inadequate. The IASC value measure, for example:

1) often incorporates non-guaranteed future interest or dividend payments without any risk-adjustment;
2) measures value using discount rates that have historically been very low (5% or less which, in many years, has been below the risk free rate available in the US capital markets);
3) are easily manipulated by altering scheduled premium inputs whenever the policy crediting rate is higher than the discount rate.

Schleef utilizes a linear programming approach to determine what he calls "effective insurance protection." Effective insurance protection equals the face amount of the policy adjusted for accumulated premiums plus interest thereon. By electing to pay an insurance premium, the insured has reduced his wealth (and his ability to self-insure) and incurs an opportunity cost. In practice, this means that a larger amount of insurance must be purchased up front in order to have a sufficient amount of "effective protection" in the required future year given that the premium outlays are compounded at an external rate. In Schleef"s research, the external rate is the capital market rate at which the insurance owner can borrow and lend.

Therefore, the rate of return on an insurance contract is not measured by reference to the future death benefit (IRR) or by reference to the rate of return on the policy's equity (buy term equal to the net death benefit and invest-the-difference comparisons); but, rather, relative to the policyowner's total wealth. In linear programming terms, "infeasibility" occurs when the sum of premiums compounded at the external rate is greater than the face amount of the policy. The further into the future the insurance is required, the lower the external rate which results in infeasibility. Schleef's linear programming model suggests that it is very difficult for a life insurance contract to avoid "infeasibility" at planning horizons greater than twenty years. Schleef, Harold J., "Whole Life Cost Comparisons Based Upon the Year of Required Protection," The Journal of Risk and Insurance Vol. LVI, No. 1 (March, 1989), pp. 83-103.

[17] For the purposes of this calculation, however, we assume a 40% adjustment (improvement) over the 1980 CSO Table.

[18] A comparable analysis is found in Daily, Glenn S. "Does Life Insurance Add Value?," Journal of Financial Planning (October, 1993), pp. 154-159. Daily provides helpful insight into life insurance purchase strategies when he demonstrates the sensitivity of the probability of achieving negative values to insurance policy design. Having huge amounts of death benefit during the early years of a policy designed for future estate tax payment may be counterproductive. This is because of the low probability of an early death. The year in which the expected value of a contract turns negative may be extended into the future by lowering the ratio between death benefit and premiums in the early years of a contract to the extent allowable by the tax code in order to have high early cash values drive compounded future death benefits. Daily's analysis suggests that a policy that , initially, does not look like "a good deal" may, in fact, prove to be financially beneficial if it is correctly redesigned. Although there may be little incentive for the insurance agent to "re-engineer" the policy (commissions are usually determined by a complex calculation that maximizes commissions based on high amounts of insurance sold with high commissions payable on premium collections per $1,000 of insurance sold up to a 'ceiling' amount—excess premiums earn little or no commission); nevertheless, prudent financial management requires the trustee to consider the merits and liabilities of a variety of policy designs. Daily, Glenn S. Life Insurance Sense And Nonsense (New York, 1992) pp. 13-14.

[19] Best's Review states: "According to the American Council of Life Insurance, the number of ordinary life insurance policies lapsed within the first two years has hovered around 20% since 1970....companies...reported just under $100 billion in surrender benefits and other fund withdrawals in 1993, up from about $73 billion in 1989. That's far higher than the...death benefits paid by the industry in 1993....lapse ratios, which reached a 10-year low of 9.4% in 1993, increased to 9.8% in 1994. Armstrong, Sean, "Caught in the Middle," Best's Review (April, 1995), p. 28. Imposing "liquidity risk" on the contractholder is, of course, one of the methods by which insurance carriers can manage the risks associated with granting a surrender option. The probability of option exercise must be taken into consideration by both the insurance buyer and the policy manufacturer in order to arrive, on the one hand, with a reasonable estimate of expected contract value; and, on the other, of a reasonable price for the coverage. According to the research of Albizzati and Geman [Albizzati, M.-O. & Geman, H., "Interest Rate Risk Management and Valuation of the Surrender Option in Life Insurance Policies," The Journal of Risk and Insurance Vol. 61, No. 4 (!994), pp. 616-637]: "The possibility of early surrender of life insurance policies is a systemic risk for insurers since the option value is a significant percentage of the policy value....Insurers face a dilemma: either experience early terminations of life insurance contracts or guarantee a high yield to avoid these surrenders, in which case the management of the corresponding asset portfolio becomes difficult." The authors seek to calculate option values "in the framework of stochastic interest rates." (p. 617).

[20] For example, we do not consider valuation of loan options, extended-term non-forfeiture options, and other determinates of policy pricing and performance. The "spread" between premiums collected from and values provided to the consumer has, in terms of our analysis, already been established by the insurer in such a fashion that their profit objectives after all option costs will be attained. The focus in this chapter is not whether the insurance policy will result in financial hardships to the carrier [although even guaranteed minimum interest crediting rates can impose financial hardship on a carrier unable to earn an adequate spread]; but, rather, on the probability that the carrier, *after achieving its profit goals* will make further premium demands in order to keep the coverage in force. Simply put, is the illustrated premium schedule credible?

[21] This methodology is similar to that utilized by Babbell, David F., & Staking, Kim B., "A Capital Budgeting Analysis of Life Insurance Costs in the United States: 1950 - 1979," The Journal of Finance Vol. XXXVIII, No. 1 (March, 1983), pp. 149-170. Babbell & Staking develop a model in which "all of the cash flows, be they in the form of premiums, dividends, terminal dividends, surrender cash values, or death benefits, are adjusted in accordance with the

probability of the insured incurring or receiving them." The Babbell / Staking model for determining the costs of life insurance policies is a major advance in understanding the dynamics of policy evaluation. The authors point out that the use of "deterministic" models based on the pioneering research of Alfred Linton in 1927, and refined further by Joseph M. Belth, suffer from "money illusion." [Linton, an actuary, developed a method to equate the cash value accumulation within a whole life policy with the ending cash value of a term insurance + side fund. Controlling for death benefits, the rate of return that brings the side fund into balance with the whole life's cash value is the net rate of return on the life insurance program. The numerator of Belth's model multiplies all funds committed to an insurance program by an assumed interest factor and, then, subtracts all funds credited. This total is divided by the net amount of insurance in force to arrive at a "benchmark" cost per $1,000 of effective insurance protection]. The trend towards lower mortality rates means that decreases in insurance costs are offset by future benefits with lower expected present values. Thus, Babbell & Staking introduce the concept of probability-adjusted present value. They employ the following formulation:

Net Present Value Expected Cost of Insurance = Present Value (PV) of Statistically Expected Costs E(C) - Present Value of Statistically Expected Benefits E(B).

The ratio: $\frac{PV\ [E(C)]}{PV\ [E(B)]} - 1$ gives a cost/benefit ratio for an insurance program that is devoid of "money illusion." A ratio of zero indicates that the cost of the insurance is "actuarially fair;" while a ratio greater than zero reflects the actuarial "markup" for the product. The degree of risk-aversion of the consumer (in terms of modern portfolio theory, the buyer's "utility function"), determines the level of actuarial "markup" that he will tolerate.

Secondly, the Babbell / Staking model has the advantage of disallowing distortions that can occur when dividends are defined as an increased policy benefit [i.e. paid up insurance added to a denominator] as opposed to a reduction in net cost [reflected in the numerator]. Net costs, because they are reflected fully in the numerator prevent manipulation of the cost / benefit ratio.

Finally, the Babbell / Staking model recognized that the "surrender or lapse of life insurance policies by policyowners prior to death or maturity figures as an important factor in the pricing of policies," and that a vector of lapse ratios was necessary to determine adequately the costs of insurance programs. Current advances in pricing models reveal the importance of correctly valuing the consumers' option to withdraw funds via lapse or loan transactions.

Option based pricing models have been shown to have great explanatory value: "Certain policy provisions provide policyholders and insurance companies with interest rate options embedded in insurance products. Policyholders have withdrawal rights. They can withdraw their funds at book value less a surrender charge. The surrender charge may be waived if the withdrawal is partial (say, up to 10 percent) or if a 'bail-out' provision has been triggered because the credited rate has dropped by the trigger amount or below the trigger level. Alternately, policyholders can withdraw funds without terminating their policies by borrowing against their own accounts through a policy loan. The loan may be at a fixed rate or at a fixed spread over the credited rate. Policyholders have credited rate guarantees, which are either minimum annual rates...or minimum cumulative guarantees...for the life of their contracts. Policyholders for flexible-premium products have the option to contribute more or less money in any policy year. This dump-in privilege allows unscheduled funds to earn the same credited interest rate as scheduled premium payments. MacMillan, Henry M., "Asset/Liability Management: Implications for Derivative Strategies," Derivative Strategies for Managing Portfolio Risk, Association for Investment Management and Research (1993), p. 38.

[22] The spreadsheet model assumes a 40% mortality improvement over the 1980 CSO mortality table; a vector of lapse ratios equal to 6% year 1, 5% years 2 and 3, and 4% thereafter. For the load XYZ Life product, it assumes policy expenses of 120% of premium in year 1 and 10% of premium thereafter. For the "no-load" ABC Life product it assumes policy expenses of 50% of first year premium and 5% thereafter. The insurance companies' profit objectives are, of course, already built into their policy illustrations.

[23] Sensitivity analysis indicates a high probability of negative funding under most scenarios. Changing the discount rate to 6% produces a present-value need for an additional $25,222. Holding the discount rate at 7%, a decrease in expenses to 110% first year and 8% thereafter results in the need for an additional $11,632; and, finally at a 7% discount rate a 3% vector of lapse rates produces the need for an additional $18,453.

[24] The log of (1 + net annual net-after tax returns) for the 23-year period adjusted for the final liquidating tax liability. Returns not adjusted for expenses of index fund ownership. Current expenses for the Vanguard S&P 500 Index Trust amount to approximately 20 basis points per year.

[25] Ghee, William & Reichenstein, William, "The After-Tax Returns from Different Savings Vehicles," Financial Analysts Journal (July/August, 1996), p. 71. Additional "fine-tuning" of the Ghee / Reichenstein model could be done through application of actual tax rates in effect during each year from 1973 through 1995. Siegel, Laurence B., & Montgomery, David, "Stocks, Bonds, and Bills after Taxes and Inflation," The Journal of Portfolio Management (Winter, 1995), p. 18, calculate the marginal brackets on both ordinary income and capital gains for a hypothetical single tax payer with $75,000 of 1989 dollars non-investment income up to the end of 1993. For years during which an indexed mutual fund was not available for retail sale, additional expenses equal of 1% of portfolio value were assumed in the Siegel / Montgomery model. Although the 20% per year turnover assumptions in the Siegel / Montgomery model are considerable higher, the after tax/after expense return on the S&P amounts to 7.96% from 1/1/73 through 12/31/93. Stock positions in the Siegel / Montgomery model are liquidated after a five year holding period. Therefore, although there remains some unrealized capital gains in their model, there is not a 20+ year accumulation. A 20% per year turnover assumption in the Ghee / Reichenstein model generates a 1973 through 1995 after tax return of 8.56%. Both 1994 and 1995 (years not covered by the Siegel / Montgomery study) were positive, with 1995 return for the S&P 500 at over 37% for the year.

[26] Fortin, R., & Michelson, S., "What Mutual Funds Really Return After Taxes," Journal of Financial Planning (April, 1996) pp. 60-65.