

CFA'S RATE OF RETURN (ROR) SERVICE

INSURER: ABC LIFE

FACE AMOUNT: \$1,032,104

INSURANCE AGE: 39

POLICY: VAR UNIV "10% GROSS"

CLASS: FEMALE NONSMOKER

| POL- ICY YEAR | *****CASH VALUE POLICY***** | | | *****BUY TERM & INVEST DIFFERENCE AT: | | | | | 7.1 %***** | | |
|---------------------|-----------------------------|----------------------------|------------------|-----------------------------------------|------------------------------------|--------------------------------|---------------------------|--------------------------------------------|-------------------------------------------|--------------------------------------------------|-------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| | ANNUAL PREMIUM | CASH SURRENDER VALUE | DEATH BENEFIT | ANNUAL OUTLAY: SAME AS COL (1) | AMT OF TERM INS (3) - (8) | TERM RATE PER \$1000# | COST OF TERM INS | SIDEFUND BEG YR (10)* + (4) - (7) | BENEFIT BEG YR (5) + (8) (= (3)) | SIDEFUND END YR COL (8) ACCUM@ 7.1 % | ANN'L ROR's 100% ART |
| 1 | 11494.00 | 3342 | 1032104 | 11494.00 | 1021266 | 0.56 | 656 | 10839 | 1032104 | 11611 | -69.2% |
| 2 | 11494.00 | 13790 | 1032104 | 11494.00 | 1009709 | 0.62 | 710 | 22395 | 1032104 | 23992 | -2.3 |
| 3 | 11494.00 | 25169 | 1032104 | 11494.00 | 997391 | 0.69 | 772 | 34713 | 1032104 | 37188 | 2.7 |
| 4 | 11494.00 | 37463 | 1032104 | 11494.00 | 984254 | 0.76 | 832 | 47850 | 1032104 | 51262 | 4.6 |
| 5 | 11494.00 | 51589 | 1032104 | 11494.00 | 970247 | 0.84 | 899 | 61857 | 1032104 | 66267 | 7.4 |
| 6 | 11494.00 | 68658 | 1032104 | 11494.00 | 955306 | 0.92 | 963 | 76798 | 1032104 | 82274 | 10.6 |
| 7 | 11494.00 | 86870 | 1032104 | 11494.00 | 939369 | 1.01 | 1033 | 92735 | 1032104 | 99347 | 9.8 |
| 8 | 11494.00 | 106326 | 1032104 | 11494.00 | 922362 | 1.10 | 1099 | 109742 | 1032104 | 117567 | 9.3 |
| 9 | 11494.00 | 127133 | 1032104 | 11494.00 | 904203 | 1.19 | 1160 | 127901 | 1032104 | 137020 | 9.0 |
| 10 | 11494.00 | 149409 | 1032104 | 11494.00 | 884807 | 1.28 | 1217 | 147297 | 1032104 | 157799 | 8.7 |
| 11 | 11494.00 | 171283 | 1032104 | 11494.00 | 864079 | 1.37 | 1268 | 168025 | 1032104 | 180005 | 7.3 |
| 12 | 11494.00 | 194886 | 1032104 | 11494.00 | 841926 | 1.47 | 1322 | 190178 | 1032104 | 203737 | 7.4 |
| 13 | 11494.00 | 220267 | 1032104 | 11494.00 | 818242 | 1.57 | 1369 | 213862 | 1032104 | 229110 | 7.5 |
| 14 | 11494.00 | 247688 | 1032104 | 11494.00 | 792908 | 1.67 | 1408 | 239196 | 1032104 | 256250 | 7.5 |
| 15 | 11494.00 | 277233 | 1032104 | 11494.00 | 765807 | 1.78 | 1447 | 266297 | 1032104 | 285284 | 7.6 |
| 16 | 11494.00 | 309097 | 1032104 | 11494.00 | 736810 | 1.90 | 1484 | 295294 | 1032104 | 316348 | 7.6 |
| 17 | 11494.00 | 343491 | 1032104 | 11494.00 | 705786 | 2.04 | 1524 | 326318 | 1032104 | 349584 | 7.7 |
| 18 | 11494.00 | 380566 | 1032104 | 11494.00 | 672597 | 2.21 | 1570 | 359507 | 1032104 | 385139 | 7.7 |
| 19 | 11494.00 | 420579 | 1032104 | 11494.00 | 637103 | 2.43 | 1632 | 395001 | 1032104 | 423164 | 7.7 |
| 20 | 11494.00 | 463812 | 1032104 | 11494.00 | 599160 | 2.72 | 1714 | 432944 | 1032104 | 463812 | 7.8 |

add \$84

* MEANS COLUMN FOR PRIOR YEAR.

| IF POLICY KEPT | AVERAGE ANNUAL ROR'S | | TAX. GAIN | MARGINAL ROR'S | |
|----------------|----------------------|----------|------------|----------------|----------|
| | 100% ART | 110% ART | IF SURR'D. | POLICY YEARS | 100% ART |
| 5 YEARS | -1.3 % | -1.0 % | 0 | | |
| 10 YEARS | 6.2 | 6.3 | 34469 | 6 THRU 10 | 9.4 % |
| 15 YEARS | 6.8 | 6.9 | 104823 | 11 THRU 15 | 7.5 |
| 20 YEARS | 7.1 | 7.2 | 233932 | 16 THRU 20 | 7.7 |

PREPARED FOR: Dr. Smith
DATE: 11-Nov-98

AN ROR CALCULATION COMPARES THE PURCHASE OR RETENTION OF A CASH VALUE LIFE INSURANCE POLICY TO THE ALTERNATIVE OF BUYING ANNUAL RENEWABLE TERM (ART) AND INVESTING THE PREMIUM DIFFERENCES IN A 'SIDEFUND', PERHAPS A BANK. THE ROR IS THE INTEREST RATE THAT, BASED ON ASSUMED ART RATES, KEEPS THE DEATH BENEFITS OF THE TWO PROGRAMS THE SAME AND EQUATES THE CASH VALUE AND SIDEFUND AT THE END OF THE PERIOD STUDIED. TWO SETS OF ROR'S ARE SHOWN: THOSE BASED ON 100% OF THE RATES IN COL (6) AND THOSE BASED ON 110% OF COL (6). SHOWN ABOVE IN COLS (4)-(10) IS THE DEVELOPMENT OF THE ROR AT 100% ART FOR 20 YEARS. OTHER ROR'S COMPUTED SIMILARLY. THE ANALYSIS IN COLS (4)-(10) IS NOT NECESSARILY A RECOMMENDATION TO BUY TERM INSURANCE: IT IS THE TECHNIQUE BY WHICH THE INTERNAL RETURN ON THE POLICY ILLUSTRATED IN COLS (1)-(3) IS ESTIMATED.

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PREPARED BY: JAMES H. HUNT, FSA
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Dr. Smith: Your agent said this was an "exceptional opportunity?" Coming from the parent of ABC Life, one could say that's an oxymoron. You are right to be "suspicious." In the above I adjusted the \$1,000/month premiums to an annual equivalent that my program uses. I conclude that the "real" return on the policy over 20 years is just 7.1% (worse for shorter periods) if the chosen investment accounts earn the 10% hypothetical returns assumed in the illustration you sent. High commissions, fees, insurance costs and investment management charges explain the 2.9% "spread" between 10.0% and 7.1%. An Ameritas policy of the same type would have a spread under 2% -- see the enclosed re Ameritas. Accordingly, this would not be an investment I could recommend. If your planner has been helpful, however, making sure you have a real pension plan and/or are funding any 401-K's or other tax-deductible plans to the maximum allowed, perhaps she can improve the offer with a much smaller base policy and a term rider, keeping the same premiums. This would not match Ameritas, but it would provide somewhat better value. I have assumed in my analysis that you could qualify for life insurance as a preferred nonsmoker, if not, then I have underestimated the ROR's, perhaps by .5% over 20 years. Feel free to call with any questions.

James H. Hunt

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RATES OF RETURN ON CASH VALUE LIFE INSURANCE POLICIES

A Rate of Return (ROR) is our estimate of the "real" interest rate earned on the savings portion of a cash value life insurance policy such as whole life (WL), universal life (UL) or variable universal life (VUL). Suppose you're considering a variable universal life (VUL) policy, in which the cash values are invested in a limited choice of "mutual funds" (technically "separate accounts"). You have sent us an illustration (showing future premiums, cash values and death benefits) based on a hypothetical gross earnings rate of 10%, which nets to 8.5% after asset charges for the insurer's mortality and expense (M&E) risks (mainly profit charges) and for investment management (as in a mutual fund). If the monthly deductions of other expense charges, particularly commissions, and of mortality charges exceed those in low cost annual renewable term (ART), as they usually do, you might conclude that the VUL policy really yields less than 8.5%. (ART policies, also called Yearly Renewable Term, or YRT, provide pure death protection -- no cash values -- with premiums increasing each year as the insured person ages.) We know how inexpensive ART can be, so we can estimate how much less than 8.5% the policy really earns. Here are the results for a \$1,000,000 VUL policy we analyzed recently for a doctor age 39.

| IF POLICY KEPT | AVERAGE ANNUAL ROR'S | | TAX. GAIN IF SURR'D | MARGINAL ROR'S | |
|----------------|----------------------|----------|------------------------|----------------|----------|
| | 100% ART | 110% ART | | POLICY YEARS | 100% ART |
| 5 YEARS | - 1.3 % | - 1.0 % | 0 | | |
| 10 YEARS | 6.2 | 6.3 | 34,469 | 6 THRU 10 | 9.4 % |
| 15 YEARS | 6.8 | 6.9 | 104,823 | 11 THRU 15 | 7.5 |
| 20 YEARS | 7.1 | 7.2 | 233,932 | 16 THRU 20 | 7.7 |

This policy's ROR's, especially during the first 5 years, reflect the heavy sales and other charges that are typical of cash value policies sold through commissioned agents. Compare the first set of "Average Annual ROR's" to the 10% (or 8.5%) assumed returns from the chosen investment accounts. The 5-year average annual return is -1.3%, meaning that if you canceled the policy after 5 years, you would have been better off to have bought ART and invested the differences between the VUL premiums and the much lower ART premiums under your mattress. After 10 years, the ROR has improved to an annual average of 6.2%. It follows that the return for years 6-10 must be better than 6.2% to average out the -1.3% ROR for the first 5 years; in fact it is 9.4% as shown under what we call "Marginal ROR's." Marginal ROR's often reveal that once a policy has been in force for some time, it may be a good policy to keep, even if it wasn't very good when purchased.

Similar explanations apply to ROR's for 15-year and 20-year periods. (We may show fewer years on policies that have been in force several years because the ROR's would be similar for longer periods.) The pattern above is typical for a new cash value policy: the longer the policy is held, the better are the ROR's, since start-up costs -- agents' commissions, especially, and other acquisition expenses like medical examinations -- are spread over a longer period. In the example above, we recommended to the doctor that the 2.9% "spread" between the hypothetical 10% return and the 20-year ROR of 7.1% was large enough to raise questions about her intended purchase and we suggested a lower cost alternative.

Although ROR's are not interest rates, they are estimates of investment returns that should be compared to interest rates. In the case of WL or UL, ROR's may be compared to returns on long-term CD's or bond mutual funds.

When the illustration you sent shows consecutive cash surrender values, we show year-by-year ROR's in Col. (11). These may be more helpful than Marginal ROR's, which are weighted averages of "Annual ROR's." In the case of a new policy, the first year's ROR is usually negative. Suppose the annual premium for \$100,000 WL is \$1,200 and that for ART is \$200; we can say your investment in the WL policy is \$1,000 (\$1,200 less \$200) in the first year. If the first-year surrender value is zero, as is frequently the case, all your investment in the first year is lost on surrender, so your ROR for the first policy year is -100%. (Agents often advise new buyers to ignore zero or low surrender values as irrelevant for those who have no intention to surrender, but usually the low values indicate high commissions and other charges that detract from long term returns on the policy.) After you've paid two or three years' premiums, Annual ROR's are sometimes abnormally high for the next several years; this is usually due to reducing surrender charges, which can be explicit (stated in your policy, as in UL and VUL) or implicit (built into the structure of WL cash surrender values).

Sometimes high ROR's for later policy years result from manipulative actuarial techniques; if so, we'll usually comment to this effect. Annual ROR's can tell you whether to keep your policy in the short run; a policy that's terrible for policy years 8-20, say, might be terrific for the 9th and 10th years due to the pattern of surrender charges.

A word on the differences between ROR's calculated for WL and UL, on the one hand, and VUL on the other. WL and UL life insurers invest almost exclusively in longer term bonds and mortgages, collectively known as "fixed income" investments. They credit each policy's cash value with investment income each month (UL) or each year (WL) after deducting a margin for investment expenses and profit. In a UL policy, this takes the form of the "Current Interest Rate," now typically 5% to 6%; for WL, the interest credit is buried in the dividend formula and called the "Dividend Interest Rate," typically in a range of 6.5% to 8.5% in 1998. The main reason that WL is typically so much better is that it is sold by mutual insurers; no shareholders participate in the earnings of mutual companies. (A few WL policies pay no dividends; the interest credit, almost always lower than 5%, is built into the structure of guaranteed cash values.) ROR's we calculate for WL and UL are therefore based on current conditions and tend to be relatively stable from year to year. Since policy values and (sometimes) death benefits vary in accordance with the "mutual fund(s)" built into a VUL, we calculate ROR's based on a hypothetical rate of investment earnings like 10% in the example on Page 1. We make no assessment of past performance. Whatever the future performance of your particular VUL's investment account(s), it will be reduced by a combination of sales and administrative charges, investment expenses, cost of insurance charges and profit margins. For a new VUL, this array of charges exceeds those in ART by so much that the "true" average annual investment return, as measured by ROR estimates, can be reduced by as much as 5.0% over a 20-year holding period, more over shorter periods. Typically, the reduction, which we call a "spread," is more like 3%. Accordingly, whether a VUL is worth buying or holding depends on the prospective spread; we like to see 2% or less, but this is seldom the case for a new VUL that includes agent's commissions. VUL's tend to be very expensive; most fees are explained in the prospectus, but insurance charges that exceed those in low cost ART, sometimes by a large margin, are a hidden cost. Plan to allocate a substantial percent of your cash values to common stocks or other potentially higher yielding accounts over a long period of time if you buy or own a VUL.

If you're thinking about buying life insurance, ROR's serve two purposes: they help you decide whether to buy ART or a cash value policy; and, they help you choose between two cash value policies. If the 20-year ROR for a UL illustration is 4.5%, someone who intends to keep his policy indefinitely might decide 4.5% over 20 years is a good return given the tax advantages of life insurance and current CD yields; someone else would either choose ART (or another term plan) or seek a better cash value policy. (Tax angles, which can complicate choices, are discussed later.) Another use for ROR's, the importance of which can't be overemphasized, is to warn you that if you think you might be one of the more than 40% of buyers who drop their cash value policies within ten years from issue, you're likely to have a poor investment return. If you're in the roughly 25% that terminates in the first three years, you'll lose most or all of your investment.

In reviewing the ROR's we've calculated, keep in mind that the illustration you sent, unless for a variable policy, displays values based on either current dividend scales (WL) or current interest rates and mortality charges (UL). Both will change in the future. Most 1998 WL dividend scales use interest rates that are likely to be reduced in future years unless interest rates on new investments rise; ROR's may thereby be overstated. Current interest rates (CIR's) on UL tend to be more in line with current investment returns, putting them at a disadvantage in their projections of future values. Some UL companies have made their long-term projections look better than they may turn out to be, either by a CIR higher than paid to existing policyholders or by the use of long-term mortality rate assumptions lower than conservative insurers use; the latter is especially true on second-to-die policies. We can usually tell when this is done, and we make appropriate comments at the bottom of the computer analysis we send.

If you're thinking of replacing an existing policy with the policy you asked us to analyze, be careful, particularly if the old policy pays dividends. Many of these policies are valuable. Be suspicious of an agent who recommends you replace an old policy. Ask your company for an "In-force Illustration." Send it to us for analysis; add a copy of the page in your policy that lists the policy's specific terms applicable to you, such as premiums, age at issue, whether you smoke, and costs of any riders, if those items aren't clear on the illustration. The cost is \$40 for the first illustration (\$75 for second-to-die), and \$30 for each additional illustration sent at the same time. If your policy was issued in the last few years, we can probably use the original illustration. Assume your existing WL policies that pay dividends, or are UL policies within the surrender charge period, or are variable life should not be replaced until proven otherwise.

Compare the policy we analyzed, or any other you're interested in, to those offered by USAA Life (800-531-8000). USAA has WL, UL, and VUL (the latter only in a few states at this writing); it conducts its business by phone, and has a track record of low costs. It's best buy is its WL, especially for older buyers (50 and up, say). A "low-load" alternative is Ameritas (800-552-3553), whose excellent VUL is available in nearly all states; it has a second-to-die policy, which USAA doesn't. Both companies are highly rated for financial strength. USAA and Ameritas also sell low-cost term life, though it is not uncommon for agent-represented companies or quote services (which receive commissions) to have lower rates.

If you sent a second-to-die policy, the "term rates" in Column (6) are estimates of what second-to-die (survivorship) term policies would sell for if marketed. The chance that both of two insured persons will die in the first few years of a second-to-die policy is usually close to zero, even if each person is age 65 or 70, so the rates shown in Col. (6) for the first few years are mostly estimated charges for administrative expenses.

If you want to know more about life insurance, order our 100-page guide, "How To Save Money On Life Insurance," by James H. Hunt, Fellow, Society of Actuaries. Send \$10 to CFA, 1424 16th St., N.W., Suite 604, Washington, D.C. 20036. The guide, a primer on life insurance, was published in 1991 by the National Insurance Consumer Organization, which became part of CFA in 1995, and it contains a 1997 update. ROR work is done by Mr. Hunt; feel free to call him at 603-224-2805, including evenings or weekends, with questions about your ROR analysis, which we realize is not easy to digest. His charge for actuarial consultation beyond answering your ROR questions is \$125/hr.

Technical Notes

Term Rate Assumptions -- ROR calculations depend on assumptions about what annual renewable term (ART) life insurance costs. The lower the assumptions, the lower the ROR's derived. We use low ART rates from seasoned companies. We also show average annual ROR's for ART rates 10% higher (110% ART) than those in Col. (6) to indicate how sensitive the ROR's derived are to the assumptions. For nonsmokers, we use "preferred" ART rates, which the majority of nonsmokers could qualify for, unless the illustration indicates "standard nonsmoker" in an insurer we know has preferred nonsmoker rates. In the case of smokers, we of course use smoker term rates. If you couldn't qualify for new insurance as a preferred nonsmoker and we used such term rates in the evaluation, your policy is more valuable than the ROR's we derived imply: add 4 to 5 times the difference between 100% ROR's and 110% ROR's to the former. Unless requested to do so, we do not use as the basis for our evaluations the popular 10-, 15- or 20-year level premium term rates, which are often very low in cost, because such policies are rarely renewable at reasonable rates without evidence of good health.

Tax Angles -- If instead of buying a cash value policy, you choose to buy lower premium ART, earnings on your investment of the premium differences might be taxable each year. The investment returns on cash value policies (which we call ROR's), on the other hand, are income-tax-free under current law if the policy is kept until death. Life insurance agents often use the term "tax-free" in talking about the investment merits of cash value life insurance without bothering to explain that this is not true if the policy is surrendered and the surrender value exceeds your basis, which is, in general, premiums paid. It is important to note that neither expense charges nor mortality charges are deducted from premiums (do not decrease "basis") in computing taxable gains, if any, when a cash value policy is surrendered. For this reason, policies issued to older buyers may never build a taxable gain because the higher mortality charges more than offset interest earnings. There's another way of looking at this subtle point: if you buy term and invest the premium differences externally, you can't reduce the annual income or capital gains on the external investment by the term premiums, as in effect happens inside a cash value policy.

Earnings on a cash value life insurance policy (WL, UL or VUL), even if surrendered with a gain, are therefore somewhat better than "tax-deferred," a term that more careful commentators on life insurance tax advantages often use; such earnings may be tax-free or partially tax-free depending on the circumstances. We show ROR's without deduction for any estimated tax due on surrender because buyers can make them tax-free by keeping the policy for life. We do, however, show estimated taxable gains on surrender, if computable. The tax advantages of life insurance are important, and you should reflect on these thoughts when evaluating the ROR's we send.

Computer Print-out -- Now we turn to an explanation of the technique we use to compute ROR's and of the columns shown. On rare occasions we hear from people who actually understand what follows! First, we'll say that an ROR is not the interest rate that accumulates your premiums to the cash surrender value; such an interest rate would be lower than an ROR because it gives no credit for the value of the death protection received. An ROR is essentially the interest rate that accumulates the premiums, less our estimate of the value of the death protection each year, to the policy's cash surrender value at the end of the period studied. The technique is a "buy-term-and-invest-the-difference" comparison known to actuaries and a few others as a "Linton Yield." It is explained this way.

In buying life insurance you have two basic choices: ART or a cash value policy (WL, say). Life insurance agents and their companies want you to make this choice on a non-financial basis: either you need ART or WL. (Since the latter pays 5-10 times the commission for the same face amount, you're likely to hear all about its advantages.) Some buyers might wonder, though: What investment return do I get for my much higher WL premiums? Or, putting it another way: What interest rate would I have to earn on outside investment of the extra premiums for WL to do as well as investing those extra premiums, so to speak, in the WL policy? It is the answer to this question that the computer seeks through an "iterative," or trial-and-error, computation. The answer usually depends on the number of years over which the comparison is made -- the longer the period, the higher the ROR. That is, the longer you hold a cash value life insurance policy, the higher the returns would have to be on an outside investment to match it.

Now turn to the computer analysis. The premiums, cash surrender values and death benefits of the policy you sent for analysis are shown in Cols. (1) to (3). Many UL illustrations show both "cash values" or "account values" and cash surrender values; the latter equals the former less surrender charges. Only surrender values can be used, however, either by borrowing against them or cancelling the policy, so it is the surrender values we use to calculate ROR's. (If zeros appear in Col. (2), it is because the illustration you sent didn't give those values.) Columns (4) - (10) show the development of the ROR (based on 100% of ART rates in Col. (6)) for the longest number of years shown, usually twenty. By study of the column headings, you may be able to see how the calculation is done. Note that the interest rate in the header over Cols. (4) - (10) is the same as that in the heading for Col. (10) and the same as that at the bottom left under "Average Annual ROR's" for the longest number of years analyzed. Note also that the last year's cash surrender value in Col. (2) equals the last number in Col. (10), which is your hypothetical outside investment. If the analysis starts with policy year 1, note further that your SIDEFUND is always greater than the policy's cash surrender value until the last policy year shown; this is another indication that ROR's for shorter holding periods are lower.

In summary, the money going into each alternative -- cash value policy, on one hand, and combination ART policy and SIDEFUND, on the other -- is the same; the death benefits of the two programs are the same (Col. (3) equals Col. (5) + Col. (8), the latter being the SIDEFUND at the beginning of the year before a year's interest is added); and the ending assets are the same. The interest rate in the header, which is found by the computer, is the one that causes these equalities. All other ROR's on the page are calculated similarly, but the step-by-step proofs of the answers are not shown.

Policies You Already Own -- If we analyzed a policy you've owned for some time, the first policy year shown is numbered higher than "1." Suppose your policy is 3 years old; we would begin with policy year "4." To get started, we need the surrender value for a policy year end; we therefore usually start the analysis at the next policy anniversary date, sometimes causing your age at the top of the analysis to look too high. We do not show taxable gains on in-force policies because the prior premiums and dividends may not be known. The age shown is your insurance age on the starting date, and we assume that you are in good enough health to qualify for new insurance at preferred rates and that you're a nonsmoker unless you've told us otherwise. If either assumption is not true, the policy is more valuable than the ROR's imply.

Miscellaneous -- We use annual premiums to find ROR's; if the proposal you sent shows premiums paid more frequently than annual, we estimate an annual equivalent. If any riders like waiver of premium or accidental death benefit are included, we deduct their premiums, sometimes guessing at them; any errors shouldn't affect the ROR's significantly. If death benefits change, we may round them to save keyboard entry time.

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November, 1998
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