



Recent interest rates  
have declined to levels  
not seen in many years.

Although the downward trend  
has reversed, low interest rates  
have already had a major impact  
on the life insurance industry.

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**I**NTEREST RATES HAVE DECLINED SIGNIFICANTLY over the past several years as illustrated on p. 23. Historical 10-year U.S. Treasury bond rates, which are readily available and represent a reasonable proxy to the seven-year corporate bonds and collateralized mortgage obligations (CMOs) used by many insurance companies, have dropped to levels not seen since the 1960s.

Interest rates are a function of inflation and risk premium. In the 1980s and 1990s, the United States had a high risk premium due to bond investors' being burned by high inflation in the 1970s. In recent years, the risk premium has returned to historical norms as bond investors gain confidence in low inflation levels.

Demographics have also played a role in the level of interest rates. As our population ages, the demand for capital decreases. This reduction in the demand for borrowing causes lenders to lower their charges, which leads to a downward pressure on interest rates.

#### International Perspective

Other countries have also experienced similar declines in their interest rates. Ten-year German bonds are currently yielding about 3.76 percent, while the average guaranteed return for German insurers is about 3.5 percent (based on contracts written in the 1990s, when interest rates were higher than they are now). Concerns have also been expressed about the health of some German life insurers due to the failure of a stress test, measuring the ability to withstand further stock market turbulence. Insurers are estimated to have about \$23 billion in unrealized losses from past investments. In response to these lower market returns, Germany has decided to reduce the guaranteed basic return (regulatory guarantee) on life insurance policies from 3.25 percent to 2.75 percent. Insurers are also cutting the bonuses given on top of the guaranteed rate.

## THE CHALLENGE OF LOWER

Japanese life insurers are facing a similar situation. They had promised high returns to their policyholders in the 1980s and 1990s but neglected to hedge their long-term liabilities against long-term fixed-income investments. Up until 1992, Japanese insurers had guaranteed interest rates of 5.5 percent on life policies. Now, under the zero interest rate policy of the Bank of Japan, these companies are suffering from large negative yield gaps on their balance sheets. This interest rate environment has contributed to the failure of seven life insurers, resulting in a total debt of \$110 billion (at 135 yen per dollar).



### Universal Life Insurance

There have been numerous effects on cash value accumulation life insurance. These include but are not limited to:

- ▶ Premium levels
- ▶ Lapses
- ▶ Secondary guarantees
- ▶ Interest rate guarantees
- ▶ Overall earnings and capital impacts
- ▶ Tax impacts
- ▶ Investment strategies
- ▶ Reinsurance
- ▶ Valuation and nonforfeiture interest rates.

**Premium rates:** As interest rates have declined, rates credited to policies have also declined. Since most cash value accumulation products have a "portfolio"-based crediting strategy, the crediting rates have not typically declined as much as the new earned rates. They have declined nonetheless.

A portfolio-based crediting strategy is one where all previous investments for the particular product or line of business are combined with the current investments to determine an overall earned rate. This earned rate is then used to determine an appropriate credited rate. A "new money"-based crediting strategy considers only current investment earned rates and not

### Treasury Rates as of September 11, 2003

NOTES/ BONDS	MATURITY DATE	% YIELD
2 year	8/31/05	2.000
3 year	8/15/06	2.375
5 year	9/15/08	3.125
10 year	8/15/13	4.250
30 year	2/15/31	5.375

Prices in 32nd of a point

past rates in determining credited rates.

In addition to earned rates, the competition and other factors are also used in determining the actual crediting rate. The interest spread is the difference between the interest rate earned by the company (whether the portfolio or new money method is used) and the interest rate that is credited to the policyholder. Target interest spreads typically range from 1 percent to 2.5 percent and can be used to cover some or all of the insurance companies' expenses and profit.

This example shows the premium required to mature a universal life insurance policy under several credited interest rates. The table on p. 24 shows that as the credited interest rate declines, the required premium increases fairly substantially.

Note that these increases in premium assume that the credited interest will apply in all future years. This is consistent with illustrations but isn't realistic as interest rates should change going into the future. One or two years of lower interest rates won't significantly increase the premium required to mature the contract, but low interest rates over a long period will have a fairly large impact.

**LAPSES:** Since lower interest rates over a relatively small num-

# INTEREST RATES ON UNIVERSAL LIFE INSURANCE

## Average 10 Year Government Bond Rates

	1999	2000	2001	2002				2003			
				1ST QTR	2ND QTR	3RD QTR	4TH QTR	1STQTR	APR	MAY	JUN
Japan	1.76	1.76	1.34	1.47	1.38	1.24	1.02	0.80	0.66	0.57	0.61
Switzerland	2.87	3.80	3.28	3.46	3.32	2.85	2.45	2.29	2.50	2.27	2.43
United States	5.71	6.12	5.06	5.12	5.15	4.30	4.03	3.94	3.99	3.60	3.53
Spain	4.73	5.53	5.12	5.17	5.31	4.81	4.55	4.10	4.19	3.88	3.69
Germany	4.50	5.27	4.82	4.99	5.13	4.62	4.45	4.06	4.17	3.84	3.72
France	4.62	5.40	4.95	5.07	5.21	4.71	4.53	4.12	4.23	3.90	3.85
Italy	4.75	5.59	5.19	5.25	5.36	4.86	4.68	4.24	4.32	3.98	3.90
United Kingdom	5.06	5.34	4.97	5.09	5.25	4.75	4.63	4.33	4.48	4.21	4.17

## Premium Required to Mature a Universal Life Insurance Policy

### Assumptions:

- ▶ Nonsmoker, issue age 35
- ▶ Option A death benefit
- ▶ Percent of premium charge of 6%
- ▶ Face amount of \$250,000
- ▶ Monthly policy fee of \$5
- ▶ COI charges equal to 60% of 1980 CSO nonsmoker age last birthday

1980 CSO TABLE	CREDITED INTEREST RATE	MONTHLY PREMIUM	ANNUAL PREMIUM	INCREASE OVER PREMIUM AT 6%
Male	6%	\$146.61	\$1,759.32	—
	4%	214.72	2,576.64	46%
	2%	324.65	3,895.80	121%
Female	6%	124.04	1,488.48	—
	4%	187.15	2,245.80	51%
	2%	293.61	3,523.32	137%

ber of years won't materially affect the premium required to mature the contract, lapse rates shouldn't materially change due to the current low interest rate environment. However, if rates were to remain near today's low levels for a number of years, a fairly substantial additional premium could be needed and policyholders may be reluctant to pay this increase, potentially resulting in higher lapses than originally priced for.

On the other hand, if interest rates remain at low levels, UL policies that have a secondary guarantee may actually have longer persistency because their secondary guarantee will help keep the policy in force without having to pay any additional premium.

**SECONDARY GUARANTEES:** Many recent UL policies have been designed with a secondary guarantee. There are two types of secondary guarantees typically found on UL policies, although the specific design within each category varies widely.

The first general design provides a no-lapse premium, and if the cumulative premiums paid into the policy equal or exceed this no-lapse premium, then the policy is guaranteed to stay in force.

The second type of design is called a shadow fund, which operates with two sets of policy values—one the normal base policy and the other with the shadow fund account. In both types of designs, the alternative calculations (for the no-lapse guarantee premium or the shadow fund) are done under more aggressive assumptions than under the base policy.

As interest rates decline, the secondary guarantees are more likely to kick in. In some illustrations today, secondary guarantees are taking over, beginning as early as age 85 to 90. With secondary guarantees, policyholders don't need to pay the additional premiums required on the typical accumulation-type UL product to keep the policy in force because they can rely on the secondary guarantee. Therefore, the lapse pattern of UL policies with secondary guarantees may be very different from traditional UL plans in a low or decreasing interest rate environment.

**INTEREST RATE GUARANTEES:** Although there are no specific regulatory minimum interest rate guarantees on life insurance

as there are annuities (life insurance must meet minimum cash value requirements instead), many U.S. life insurance companies have had, until recently, a 4 percent minimum guaranteed credited interest rate. Given the current interest rate environment, a change is probably warranted.

As earned interest rates continue to decline, companies may bump up against their minimum guarantees while trying to maintain target interest spreads. In some cases, the interest spread may need to be reduced in order to meet the minimum guaranteed crediting rate, thus reducing or

even eliminating profitability on the product. In some extreme cases, it's possible for earned rates to drop to levels that would make it difficult or impossible for companies to cover their expenses.

The long-term guarantees in life insurance present a problem since it's currently impossible to lock in an earned rate for the life of the policy (often 50 years or more). Even if longer-term investments were available, the uncertainty in the timing of lapses and mortality makes the selection of investments difficult. Life insurance companies could run into problems with any interest rate guarantee that happens to be higher than the current interest rate, even many years after the initial guarantee—particularly if the lower interest rates persist for a fairly long time.

**OVERALL EARNINGS AND CAPITAL IMPACTS:** If earned rates fall to a level close to the guaranteed credited rate, not only would overall earnings on this line of business decline or be eliminated, but additional capital would be required to support the business. Again, if this scenario were to take place, companies could leave crediting rates lower for an extended period in order to try to recoup some of the lost profits on this line of business. More likely, however, companies would stop writing this product or line of business and would introduce a new product or series of products geared toward the lower interest rate environment where they can meet their target profitability.

Profitability on in-force business may be affected even more than the new business written. As interest rates decline, the overall earned rate on the portfolio declines. Because companies are typically slow in decreasing the portfolio credited rate in this decreasing environment, due to competitive pressures and not wanting to be the first to decrease rates, the interest spread will narrow and anticipated margins won't be achieved.

Profitability on UL products with a secondary guarantee may be hurt more than that on traditional UL products in a low interest rate environment. On secondary guarantee products, as long as the minimum required premium level has been paid, additional premiums are usually not forthcoming to help off-

set some of the deficits, since policyholders can rely on the secondary guarantee. Typically, the more aggressive the assumptions are set on the secondary guarantee, the more margins will be lost.

As was mentioned earlier, some or all of the expenses and profit margins are contained in the interest spread. If more of the expenses and profits are built into the cost of insurance (COI) charge or another explicit charge, the overall earnings picture may not be as bad as for a company that completely relies on the interest spread to cover both expenses and profit (and has a relatively high interest rate guarantee). Also, if mortality experience has been good, some of the lost earnings due to the low earned rate can be offset by gains from positive mortality experience. If a company is more efficient than priced for, small but positive expense savings can be realized and added to profits.

When doing a profitability analysis, a source of earnings analysis will also be helpful, particularly in this interest rate environment. Even before this, when pricing the product, looking at various stochastic modeling scenarios would help avoid surprises. Stochastic modeling is recommended in addition to the sensitivity testing normally done in the pricing process.

**TAX IMPACT:** Universal life policies are subject to Sec. 7702 and Sec. 7702A of the Internal Revenue Code (IRC). These regulations contain certain specific interest rates that must be used to maintain compliance, no matter what the current interest rate environment looks like. IRC Sec. 7702 provides the definition of life insurance. Each policy must meet one of two tests in order to be considered life insurance, allowing the policy to receive the benefits of life insurance (i.e., tax-deferred accumulation of interest earnings and generally tax-free death benefits).

Under Sec. 7702, a life insurance contract must meet either: (1) the *cash value accumulation test*, which requires the cash value to be less than the net single premium (which is calculated at 4 percent interest) at all times, or (2) the guideline premium and cash value corridor requirements, where the guideline premium test requires premiums paid under the contract to be less than the larger of (a) the *guideline single premium* (which is calculated at 6 percent interest) or (b) the *cumulative guideline level premium* (which is calculated at 4 percent interest).

(Note that the cash value is determined without regard to any surrender charge, policy loan, or reasonable termination dividends.)

Compliance with Sec. 7702 is important since products with premiums higher than those calculated under this section aren't considered life insurance under the IRC and don't qualify for the favorable tax treatment given to policyholders of life insurance. Also, the life insurance company may pay current income taxes on the reserves set aside to fund future payments to policyholders.

Sec. 7702A is a test that must be met in order to avoid significant tax penalties when money is borrowed from the policy. This test is done over the first seven years of the policy. A policy with premiums higher than allowed by Sec. 7702A is

considered a modified endowment contract (MEC) and has significant tax penalties compared with a life insurance policy.

Consider the following scenario:

- ▶ Male, nonsmoker, issue age 35
- ▶ Face amount of \$250,000
- ▶ Current crediting rates of 2 percent
- ▶ Annual paid premium of \$3,896 exceeds 7702 guideline level premium of \$3,259
- ▶ Cumulative annual paid premium at duration 10 ( $\$3,896 \times 10 = \$38,960$ ) exceeds the 7702 guideline single premium of \$36,995

Using the guideline premium test in this scenario would result in the failure of Sec. 7702 requirements, since the cumulative paid premiums exceed the guideline single premium by duration 10 and the annual paid premium exceeds the guideline annual premium.

Note, however, it's still possible to meet the requirements of Sec. 7702 by using the cash value accumulation test as shown on the next page.

While compliance under the guideline premium test can be determined at issue, compliance under the cash value accumulation test must be reviewed on an ongoing basis. Therefore, it may not be beneficial to switch from the guideline premium test to the cash value accumulation test. Note also that once a



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## Cash Value Accumulation

ATTAINED AGE	CASH VALUE	NET SINGLE PREMIUM
35	\$ —	59,154
45	36,297	82,503
55	77,701	112,839
65	121,857	148,428
75	163,786	183,927
85	197,554	211,949
95	226,982	233,395
99	243,424	244,760

test is chosen, you can't change tests within that same product line; a new product line must be introduced with the new test.

This interest rate problem could be resolved with changes to Sec. 7702 to reflect the current interest rate environment. However, this isn't likely to happen for various reasons, which are beyond the scope of this article.

**INVESTMENT STRATEGIES:** Insurance companies have traditionally invested most of their assets in bonds. Are alternative investments available that would allow life insurance companies to earn higher yields? The volatility of the stock market has been of concern to U.S. insurance regulators. In Europe, the regulatory environment has allowed higher percentages of European insurers' assets to be invested in stocks. During 2001 to 2003, significant investments in stocks have hurt several large European insurers. Worse, the losses on their stock investments caused them to liquidate their stock investments at the low point of the market. So investing more in stocks doesn't seem to be a panacea for insurers. One method of expressing this concern in the United States is that risk-based capital for an insurance company assigns a 30.0 percent factor to stocks compared to a factor of 0.4 percent for high-quality bonds.

Insurers also use mortgages, real estate, and private placement bonds, which behave similarly to bonds.

Companies must be careful not to take on too much additional risk to try to boost returns. Back in the 1980s, heavy investment in junk bonds led to the downfall of several U.S. insurers.

Another warning with respect to investment strategies is for companies to continue to try to match asset and liability durations and not to try to invest longer in the current low, but steep, yield curve environment. The reason for this is that when interest rates turn around, companies would incur losses trying to get out of the then longer-term, lower-yielding assets.

Some companies have begun to invest shorter in the hope of later being able to invest longer when rates rise. But this strategy is also risky as rates could stay low for a long period or worse, decrease further, resulting in these companies, having to invest at even lower rates, further reducing margins.

Some companies that write UL with secondary guarantees that are considering using swaps and/or hedges. To date, to the best of our knowledge, this type of approach hasn't actually been implemented.

**REINSURANCE:** The lower interest rate environment has had a

major impact on annuity reinsurance; it has become much more difficult for reinsurers to find the appropriate investments to support their efforts. With respect to universal life, reinsurers tend to prefer products where it's not very likely the secondary guarantee will kick in. With the interest rate decline, secondary guarantees are more likely to kick in earlier in the policy. Therefore, reinsurers may be even more selective in the UL plans they're willing to reinsure.

**VALUATION AND NONFORFEITURE INTEREST RATES:** The valuation interest rate for 2004 has already been determined and will be the same 4.50 percent as in 2003. If interest rates continue at low levels, the valuation interest rate for 2005 could fall to 4 percent, increasing required reserves. The nonforfeiture interest rate would also be reduced, beginning in 2006. With the introduction of the 2001 CSO, which is expected to lower reserves, a reduction in the valuation rate would probably offset this change.

Further analysis is needed to determine the specific impact on each company. Note that the impact may be greater for UL products with a secondary guarantee than for those without one. In either case, as it becomes more apparent what the valuation and nonforfeiture rates will actually be, some analysis of the impact may be in order.

### Conclusion

The recent substantial decline in interest rates has had many impacts on cash value accumulation products in the United States, some more obvious than others. We hope this article has potentially alerted you to one or more impacts you might not have thought of so you can take action to better manage your product line and overall business.

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### Resources:

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