

UNIVERSAL LIFE PRODUCTS: KEEPING THE FOCUS ON FINANCIAL RISKS AND RETURNS

Universal life (UL) products have become hot sellers in the U.S. life market, largely as a result of extended no-lapse guarantees (NLGs) specifying that the policy will remain in force if certain conditions are met, even if the regular policy account reaches zero value. Until recently, it seemed that products with new NLG features were released almost weekly, with increasingly competitive premium rates. However, this success has been accompanied by controversy and increased regulatory oversight. Some industry observers are concerned about the profitability and risk exposure of the new products, believing that they may jeopardize insurers' financial condition. This *Update* gives an overview of the universal life market and analyzes specific financial issues related to UL products. It also provides a case study with an illustrative assessment of a product offering competitive NLG premium rates.

BACKGROUND

In the late 1990s and into 2000, sales of UL products were in a period of steady decline. Market share fell from 38% in 1985 to a low of 17% in 2000 and, in fact, fell to last in the four major types of retail life products (variable life, whole life, term and UL). However, over the past three to four years, sales boomed and by 2003 UL products became the industry's leading seller, with a 35% market share (*Exhibit 1*).

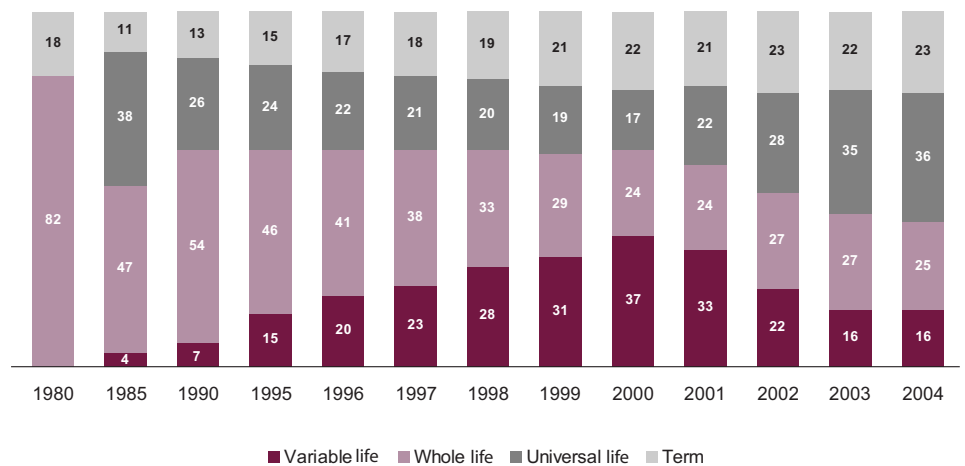
There are several reasons for this turnaround. Sales of UL products have been helped by reductions in NLG premiums, which make them more consumer friendly. It is not uncommon to find premiums on UL products with a 30-year guarantee that are lower than 30-year level term premiums.

Capital market conditions have also contributed to the rise in sales of UL products. Equity markets enjoyed double-digit returns in 1995-1999, leading to the surge in variable product sales. By 2000, it seemed as if the entire life insurance market was going variable. At the same time, interest rates continued to move

downward. However, with the downturn in the equity market starting in 2000 and declines in variable life sales, consumers and distributors began searching for stability. They found it in the form of fixed life products, UL in particular.

Sales of UL products are also affected by other market developments. UL continues to be sold in estate planning situations, although sales growth may have been dampened by the changes to estate tax laws adopted a few years ago, including the increase in estate tax limits. It appears that this has been offset by increases in other areas. The reduced level of NLG premiums has undoubtedly led to some

EXHIBIT 1
Market Share of Individual Life Insurance



Source: LIMRA International. 2004 figures based on Q2 YTD. Based on first-year premium. Sales of variable life into fixed account are included with variable life.

Tillinghast estimates that perhaps 50% of all UL sales contain some form of no-lapse guarantee.

replacement sales. Another contributing factor has been the use of UL in sales with premium financing arrangements. This can take several forms, but involves borrowing money and purchasing life insurance simultaneously. The guaranteed nature of UL with NLG works well in this application. Finally, sales of UL may be helped by the changing nature of the life insurance sales force in the U.S. Newer agents appear to be less inclined to sell higher premium traditional whole life products and prefer the greater premium flexibility inherent in UL products.

UNIVERSAL LIFE PRODUCTS TODAY

UL products are sold in two main markets: cash accumulation and protection. Cash accumulation emphasizes building cash values, ideally via attractive non-guaranteed elements including high-credited interest rates. Protection sales focus on offering death benefits for low-premium levels, ideally on a guaranteed basis. It is the protection market where extended NLG features are employed, and it is this market that has exhibited the most activity. Tillinghast estimates that perhaps 50% of all UL sales contain some form of NLG.

Although the primary focus of the NLG has been to offer guarantees to age 100 or beyond, products are also sold with shorter guarantee periods, e.g., to attained age 85. Consumers fund the guarantees in one of several possible forms, typically via a single premium or through limited pay (say, premiums paid for 10 years), or level premiums for life.

NLG features are generally offered in one of two product designs: shadow fund

or stipulated premium. A shadow fund design provides that a product with a zero cash value will not lapse, so long as a defined shadow fund remains positive. Stipulated premium designs require that a certain cumulative level of premium be paid to meet the guarantee.

Most recently, shadow fund products have been more popular in the industry because they allow greater flexibility on premium patterns and guarantee levels. They also result in lower statutory reserve levels in certain situations. The same NLG premium levels typically generate higher statutory reserve levels on stipulated premium products.

The key competitive feature on protection-oriented UL products is the level of the NLG premiums. For example, for a male, best nontobacco risk class, issue age 65, at a \$1 million face amount, sample premium rates are in *Exhibit 2* (shown separately for level pay in all years and for a single pay).

So how do companies that offer the more competitive products find a way to sell these products while still earning their target financial return? There are several key drivers of financial return. A primary

driver for the return-on-investment (ROI) metric is being able to reduce the level of statutory reserves held on the product, ideally down to the economic reserve level (discussed later).

With low expected mortality, especially on preferred risk classes, “standard” formulaic reserves may be excessive. Companies have generally used one of the following approaches to reduce the level of statutory reserves held on UL products.

■ Unorthodox design techniques

Companies have found that if they design their UL products with unorthodox loads on their shadow fund, the effect is reduced statutory reserves based on the formulas in the current version of Actuarial Guideline 38 (AG 38). Some examples of this include:

- premium loads that are significantly higher on premiums in excess of a specified threshold premium than those up to threshold premium (perhaps 40% to 50% on premiums in excess of target)
- interest rates that are tiered based on shadow fund value (10% up to benchmark fund value, 4% in excess)
- use of multiple shadow funds.

EXHIBIT 2 NLG Premiums for Male Age 65, \$1 Million Face Amount

Percentile	Level Pay	Single Pay
5%	\$19,331	\$281,366
10%	19,819	285,767
25%	20,394	296,913
Median	21,061	304,815
75%	22,465	315,510

Source: Full Disclosure by Blease Research (7/1/2004).

Offshore reinsurance is often used in connection with unorthodox design techniques to reduce statutory reserves, with the difference between statutory and economic or GAAP reserves backed by a letter of credit.

■ Reinsurance agreement with affiliate offshore company

In this approach, companies enter into a reinsurance agreement with an offshore affiliate company that holds a reserve in accordance with local insurance regulatory requirements (typically net GAAP). The difference between full statutory reserves and the reserves held offshore is backed by a letter of credit (LOC) that carries a much lower pricing cost than using equity to fund the redundant reserve. An important consideration here is that the LOC cost is usually guaranteed for only one year and, perhaps more importantly, some companies are close to hitting their LOC capacity. This has given rise to investigation of capital market techniques to fund redundant reserves, including securitization. Although no UL NLG deals have been closed yet, several are under investigation.

Offshore reinsurance is often used in connection with unorthodox design techniques to reduce statutory reserves, with the difference between statutory and economic or GAAP reserves backed by an LOC.

■ Pricing directly on an economic reserve basis

In this approach, companies price assuming that reserves are on an economic reserve basis. They do this either because they are governed by another country's accounting basis (such as Canada's) or they argue that the extra reserves are backed by free surplus that is not otherwise being used.

■ Reinsurance with a third party

Finally, an approach that has been used in the past, i.e., securing NLG reinsurance

with a third-party reinsurer, is effectively no longer available, as the few reinsurers active in this area have pulled back due to concerns both over LOC capacity and the potential cost of the NLG feature.

REGULATORY DEVELOPMENTS

We noted above that UL products with NLG are subject to AG 38, which was adopted at the end of 2002. For UL products with conventional shadow fund loads and other UL products that allow prefunding of the NLG, AG 38 has resulted in a significant increase in statutory reserves for policies issued on or after January 1, 2003.

The use of unorthodox shadow fund design techniques has led some in the life insurance industry to call for changes to AG 38. Specifically, they believe that the lower reserves using unorthodox designs are counter to the intent of AG 38. Others in the industry believe they are complying with the intent of the guideline and that their reserves are adequate.

Recently, this issue has come to a head via proposed changes to AG 38. The Life and Health Actuarial Task Force (LHATF) of the National Association of Insurance Commissioners (NAIC) proposed revising AG 38 by adjusting the formula used to calculate reserves. The change would primarily affect shadow fund design products that employ a percent of premium load and/or a multiple fund approach. Depending on the level of the shadow fund loads, the increase in statutory reserves could be significant and would apply retroactively to products issued beginning January 1, 2003.

At the winter 2004 NAIC meeting in New Orleans, the A Committee (the parent committee of LHATF) met to discuss the reserve problems raised by AG 38. The A Committee directed LHATF to recommend, by June 2005, a solution based on asset adequacy that would be consistent with the long-term reserve approach that is currently being developed by the American Academy of Actuaries UL Working Group (ULWG).

The Academy formed the ULWG in the summer of 2004 to develop a principle-based approach for determining reserves and capital requirements for UL, term and variable life products. The ULWG is leveraging off the work that has already been done on proposed changes to variable annuity reserve and risk-based capital requirements. The ULWG is focusing initially on UL products with NLGs and has a target date of December 31, 2005 to make a recommendation to LHATF. While the A Committee did not halt work on a formula change to AG 38, some people in the industry believe that it will now be difficult to get a formula change approved by the NAIC.

In light of this new directive from the A Committee to LHATF and the potential delay in a resolution of the reserve issue, the New York Insurance Department made an emergency amendment to New York Regulation 147 effective year-end 2004. For policies issued from 2003 to 2005, the amendment incorporates the formula modifications to AG 38 that were included in LHATF's most recent proposal. For policies issued January 1, 2006 and later, the amendment provides a formula-based approach that is significantly different, but that will also result in considerably higher reserves for some product designs.

Several industry observers are asking pointed questions about the expected level of return on these products and the degree of risk assumed.

FINANCIAL ASSESSMENT

A key part of the UL discussion is the level of financial return and risk assumed in selling these products. In the past, this topic took a backseat to discussion of various approaches that companies used to reduce the level of redundant reserves. Now, however, the debate has extended to risk and profitability, and several industry observers are asking pointed questions about the expected level of return on these products and the degree of risk assumed.

Based on our work, we have found that the following are the key drivers of profitability on UL products:

- earned interest rate, particularly in later policy years
- lapse rates, particularly in later policy years
- mortality, assuming business is not first-dollar reinsured (in which case the relative level of reinsurance rates becomes a key driver)
- approach to dealing with redundant reserves, including cost of backing redundant reserves, if any.

In order to assess the level of financial return and degree of risk, we have developed a case study of a representative product with competitive UL NLG premiums. Key design characteristics and assumptions underlying the case study are shown in the box on page 6.

As a simplifying assumption, the case study is based on only one cell (male, preferred nonsmoker, issue age 65, \$1 million face amount), at two different premium patterns (level pay and single

pay). The financial assessment is based on a level NLG premium of \$21,500 and a single NLG premium of \$310,000. This level of premium is very competitive for a second-best nontobacco risk class. Our mortality assumption is consistent with a typical industry assumption for a second-best nontobacco risk class based on a four nontobacco risk class underwriting standard. An implicit assumption in our financial assessment is that the product utilizes a shadow fund design, with loads set such that the level of statutory reserve held is equal to an economic reserve.

For the purpose of this article, economic reserves are calculated using a simplified gross premium methodology, based on best-estimate assumptions with margins (in the nature of provision for adverse deviation) for key assumptions. Margins for interest are derived by using the CTE65 methodology. Margins are also built-in for lapse (base lapse rates reduced by 50%, e.g., from 2.5% to 1.25%) and mortality. The product targets a 10% to 13% ROI based on distributable earnings, comparable to the desired range of returns

for UL products with NLG features from the Tillinghast Pricing Methodology Survey. Profit tests have been run on both a deterministic and a set of 200 stochastic interest scenarios with a 10-year Treasury mean reversion target of 5.5%. We have also run a series of stress tests, mostly on a deterministic basis.

SUMMARY OF RESULTS

The deterministic profit test (*Exhibit 3*) shows a lifetime ROI of 13.2%, with a profit margin (present value of profits divided by present value of premiums, discounting at 6%) of 6.6% (both measures are based on aftertax distributable profits).

The stochastic results show a considerable amount of volatility, although the results are generally symmetric around the deterministic result.

At 12.9%, the mean ROI is only slightly below the deterministic result (contributing factors to this include our non-callable/asset investment strategy and the absence of an excess lapse adjustment in high-interest scenarios). We have found

EXHIBIT 3
Base Profit Test Results

	ROI	Profit Margin at 6%
Deterministic	13.2%	6.6%
Mean of stochastic	12.9	7.2
50th percentile	12.9	6.7
10th percentile	6.8	0.6
5th percentile	5.6	(0.3)
CTE90	4.7	(0.6)

Our stress test results show considerable sensitivity to the net earned rate and the lapse rates.

that the ROI measure can be nonmeaningful in certain stochastic tests because of strange patterns of gains and losses, although not in this case. Therefore, we advocate examining other metrics as well, such as the profit margin. The mean profit margin is approximately 7.2%, again close to the deterministic result.

We have also calculated a CTE90 metric, which is the average of the worst 10% of scenarios. This is meant to provide an indication of the tail results, without undue focus on one particular scenario. These show a reasonably significant drop-off from the median, although the CTE90 ROI is close to the aftertax earned rate, not an unreasonable minimum acceptable return.

We also ran a series of stress tests, most of them on a deterministic basis (one stochastic sensitivity test was run, increasing the mortality margin in the reserve calculation from 5% to 10%). The tests and results are shown in *Exhibit 4*.

These results show considerable sensitivity to the net earned rate and the lapse rates. Most companies price and credit

interest to universal life using a portfolio yield method. We have assumed, for purposes of this case study, that the initial portfolio yield rate is consistent with a 5.5% 10-year Treasury rate. Therefore, our deterministic run assumes a level interest rate environment. In our experience, the ultimate 10-year Treasury rates assumed in the industry are generally from 5% to mid-6%.

There is also a reasonable amount of variability in lapse rates assumed in the industry. Given the lack of directly relevant experience and the sensitivity of profitability results, care should be taken in setting this assumption.

A 10% increase in mortality results in reducing ROI by 2.3 percentage points. Increasing the mortality margin in reserves from 5% to 10% reduced the ROI by 1.4 percentage points. Given the uncertainty surrounding older age mortality, use of a higher mortality margin may be appropriate.

In the process of developing this case study, one other sensitivity test was also run, assuming level pay only. The most

notable finding from this test is that it showed much more significant volatility in the tail results of the stochastic interest scenarios. Whereas the single pay scenario purchases most of its assets at issue, the level pay purchases more assets in the future, where interest rate volatility has more impact.

Our case study uses a simple asset strategy, assuming that both initial and reinvestment assets are a mix of noncallable bonds with average maturity of about 13 years. For level pay products in particular, there is significant reinvestment risk because most investable cash flows are received years after issue. There are hedging instruments available to mitigate this risk, although earnings might be volatile unless hedge accounting can be used. To the extent that hedging reduces interest-rate risk, it also can reduce economic reserves.

Another risk that needs to be considered on UL NLG pricing is business mix shifts. Although not explicitly part of our case study, we have seen considerable variability in profitability (and product competitiveness) by issue age, risk class and funding level. Experience suggests that distributors tend to be savvy in picking out the most competitive, and potentially less profitable, cells. Insurers should be wary about relying on an assumption that profitability for certain cells will subsidize others.

EXHIBIT 4 Profit Stress Test Results

	ROI	Profit Margin at 6%
Base deterministic	13.2%	6.6%
Increase net earned rate by 1%	16.1	10.5
Reduce net earned rate by 1%	9.5	2.7
Increase base lapse rate from 2.5% to 4.5%	19.4	10.7
Reduce base lapse rate from 2.5% to 0.5%	7.1	1.2
Increase mortality by 10%	10.9	4.3
Base stochastic*	12.9	7.2
Increase mortality margin in reserves from 5% to 10%*	11.5	7.2

*Mean results are displayed

UL products can be designed to earn a reasonable return, although the amount of risk accepted is not insignificant.

RISK AND RETURNS

UL products with NLGs will continue to attract a significant amount of attention, and continue to generate a considerable amount of debate. Much of the product outlook will depend upon the developments in the regulatory front, which will

likely take a while to be resolved. We expect increased focus on the financial risks and returns. As our case study shows, UL products can be designed to earn a reasonable return, although the amount of risk accepted is not insignificant.

ABOUT TOWERS PERRIN

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The Tillinghast business of Towers Perrin provides global actuarial and management consulting to insurance and financial services companies and advises other organizations on risk financing and self-insurance. We help our clients with issues related to mergers, acquisitions and restructurings; financial and regulatory reporting; risk, capital and value management; products, markets and distribution; and financial modeling solutions. More information about Tillinghast is available at www.towersperrin.com/tillinghast.

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CASE STUDY OF A UL PRODUCT WITH NO-LAPSE GUARANTEES

Design Specifications

- Male, preferred nonsmoker, issue age 65
- Regular account value
 - 3% guarantee interest rate
 - 150 bp interest spread
 - 10% of premium load
 - \$120 per policy load
 - per unit load: \$7 for policy years 1 through 5, zero thereafter
- Shadow fund loads: designed to produce competitive NLG premium and statutory reserves = economic reserve
- Guaranteed NLG premium for \$1 million coverage: \$21,500 level pay, \$310,000 single pay
- Death benefit option A
- The initial surrender charge is the maximum allowed, then grades to zero over 20 years.

Key Assumptions

- Earned interest rate: Based on a mix of noncallable corporate bonds; initial and reinvestment bonds have average maturity of 12.8 years and a net earned rate of approximately 6.25%. Reinvestment earned rate is consistent with assumed 10-year Treasury rate of 5.5%. Due to rollover of shorter maturity bonds, projected earned rates in deterministic scenario increase slightly over time, e.g., to 6.6% after 20 years.
- Lapse rate: 2.5% in all years, goes to 1% when NLG in effect (i.e., shadow fund is positive, regular account value zero)
- Business face amount mix: 70% level pay, 30% single pay
- Statutory reserves: equal to economic reserves calculated at CTE65 with mortality (5%) and lapse margins (50%)
- Taxes: 35% tax rate; reflects DAC tax; tax reserves equal to 90% of economic reserve in year one, grades to 100%
- Reinsurance: none
- Mortality: 40% of 1985-90 SOA Table, grading (starting at age 85) to 70% by age 110
- Target surplus: based on 250% of NAIC RBC formula
- Age 100 treatment: policy continued, full death benefit paid at age 110
- Pricing horizon: age 110
- Expenses
 - First-year distribution: 125% of target premium, 4% on excess
 - Renewal distribution: 4% of premium in years 2 through 10, 2% thereafter
 - Issue/underwriting: \$800 per policy issued
 - Maintenance: \$60 per policy in force
 - Premium tax: 2%.