Variable annuities in an uncertain world

How experience and expectations will create change in the marketplace

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Pacific Life Insurance Company commissioned Oliver Wyman to write a report on the state of the variable annuities market with a focus on how recent experience and future expectations are likely to change the product landscape in the near term. The primary audience includes broker-dealers and other distributors of variable annuities.

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Oliver Wyman's Insurance practice operates broadly across three core areas: strategy, operations and finance, spanning the entire activity chain - from product distribution, customer strategy, underwriting and pricing to risk, asset/liability and claims management. Our client work encompasses the key issues confronting the property, casualty, life and health insurance industry: strategy and growth, capital adequacy and productivity, distribution and marketing. We are also a valued resource to regulators and other industry bodies shaping the future of the insurance sector.

Our Insurance practice consults extensively on issues related to variable annuities and other separate account (unit-linked) products. We distinguish ourselves by bringing together three critical perspectives: a strategic and global understanding of the major business trends in the industry, deep experience in capital market risks, and actuarial expertise that provides a strong understanding of the nature of insurance liabilities. We work closely with our clients to address the challenges of business strategy, risk and financial effectiveness - from market entry, product design/pricing and distribution to risk management, capital usage and performance measurement. We also license our proprietary industry-leading ATLAS software to insurers for the financial management of variable annuities.

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Insurance products are issued by Pacific Life Insurance Company in all states except New York and in New York by Pacific Life & Annuity Company. Product availability and features may vary by state.

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Executive summary

Demographic, societal and economic changes are strongly influencing savings and retirement needs, creating a huge opportunity for financial service providers. Insurers have responded with an innovative hybrid product – the variable annuity with guaranteed living benefits. These products offer the potential for asset growth, investment flexibility, access to cash as well as protection against adverse market performance and the risk of outliving one's savings.

Insurers do not operate in a vacuum. Their products must evolve with customer needs and preferences, but also respond prudently to developing experience, competitive forces and economic conditions. This is not surprising, but a natural part of any product lifecycle. However, the complexity and long-term nature of the savings/retirement challenge make the design and pricing of variable annuities a balancing act between the benefits offered and fees charged.

Interest rates have plummeted and global equity values have fallen in response to the credit crisis, creating a dramatic rise in investment uncertainty. This highlights the insurance value of the variable annuity, but also increases the cost of providing that protection. Insurers will need to act accordingly by adjusting their products to maintain an appropriate equilibrium between features and fees.

Variable annuity providers will respond in a variety of ways. Some may temporarily withdraw from the market. Some will reduce guaranteed benefits or raise fees. Still others will impose greater policy restrictions. Most organizations will opt for a combination. One of the keys to success will be greater product transparency. We anticipate a rebirth of simpler, lower cost products that provide straightforward value which can be clearly demonstrated by advisors and understood by consumers.

The need for retirement solutions has never been greater and variable annuities will continue to play an important role in helping individuals reach their savings and income goals. However, the benefit/fee structure of today's top-selling products is a recipe for loss and cannot be sustained.

"The most effective way to cope with change is to help create it."

L.W. Lynett

We see 2009 as a year of transition for the insurance industry. There will be upheaval as insurers broadly re-evaluate their variable annuity businesses and adjust products to offer value at reasonable prices. Similarly, in an uncertain world, distributors will find ways of applying the savings and income protection of these new variable annuities to their clients' portfolios.

Variable annuities as a retirement solution

Variable annuities will continue to play a prominent role in helping individuals reach their savings goals and retirement income requirements

Despite the many issues complicating the retirement challenge[1] for the public and private sectors, the individual remains the center of attention: people struggle to accumulate sufficient assets to generate stable income for retirement, but continue to require liquidity as well as protection against multiple risks and the eroding effects of inflation.

With the variable annuity, the insurance industry offers an attractive option for meeting many of these needs. In particular, products with guaranteed living benefits offer a clear message – income you cannot outlive combined with investment potential and market risk protection. This powerful combination can make variable annuities an important part of a savings/retirement portfolio. Recent volatility and economic uncertainty have only accentuated this value proposition relative to straight market investing relying on asset allocation and risk profiling.

In many ways, insurance companies are uniquely positioned to offer products with upside potential and long-term downside protection due to their strong balance sheets, business alliances, long investment horizons, risk management capabilities and extensive distribution networks. Despite these advantages, meeting multiple needs and insuring against multiple risks within a single product makes the design and pricing of variable annuities a complex exercise. Insurers must reach a compromise between the protection and flexibility offered in relation to the fees charged, with due regard to sales and market constraints.

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1 For example, see *The New Retirement Landscape – Reaping the rewards*, Oliver Wyman, 2007

A variable annuity can be an important part of an overall long-term retirement strategy. It’s the only investment that provides lifetime income options, a guaranteed death benefit to protect your beneficiaries, and the ability to transfer among investment options tax-free. It also offers the potential to grow your assets.

Guarantees are subject to the insurer’s claims-paying ability and do not protect the value of the variable investment options, which are subject to market risk. The value of the variable investment options will fluctuate, and when redeemed, may be worth more or less than the original cost. If withdrawals are taken prior to age 59½, a 10% federal tax penalty may apply.

The value of a variable annuity depends on the complex interaction of product guarantees, investment conditions and the fees charged

What affects the value of a variable annuity?

A variable annuity can be viewed as an investment fund combined with a (potentially complex) financial derivative that provides insurance protection. As such, the value to the consumer, and hence the cost to the insurer, depends heavily on the product design (guarantees, investment alternatives and fee structure), its interaction with external market factors and the policyholder's use of discretionary options.

- The guaranteed benefits and other product features have a tangible impact on the value of the insurance protection

Some of the more common features of the popular lifetime guaranteed minimum withdrawal benefits ("GMWB") are shown in Exhibit 1. These elements enhance the benefit level and have the potential to provide greater value to the customer at greater cost to the insurer.

Exhibit 1: Popular features of lifetime GMWB policies

Age banding	The guaranteed withdrawal rate depends on the policyholder's age at first withdrawal. Typically, higher withdrawal rates are offered at older ages.
Step-ups	Step-ups, or ratchets, allow the policyholder to "lock in" market gains by resetting the guarantee level to the current account value.
Bonus credits	Bonus credits can be viewed as a form of inflation protection. The base amount on which future withdrawal benefits are defined increases by a fixed percentage if the policyholder does not withdraw funds in that year.

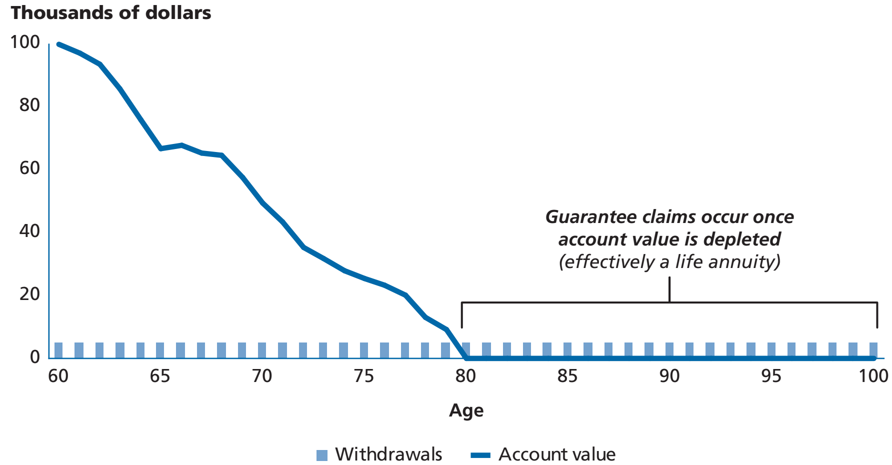
Consider a simple accumulation benefit which guarantees (irrespective of actual investment performance) that the client's account balance at the end of 10 years will be at least as large as the initial $100 deposit. The value[2] of this guarantee is $5.07, but an $80 guarantee (80% of the deposit) lowers this to $1.30 – almost a 75% decrease in cost for only a 20% reduction in the guaranteed amount.

- Interest rates and uncertainty in market returns are the main economic drivers of value

Lower interest rates increase the value of guarantees because of the time value of money[3]. Exhibit 2 illustrates this link for a simple withdrawal benefit that guarantees the policyholder (currently age 60) a minimum income stream of 5% for life on a $100,000 deposit. Suppose that due to poor fund performance and early withdrawals, the account balance is exhausted at age 80 and the annuitant dies at age 100.

2 In this example, interest rates are 3.5%, volatility is 10% and fees are 2% per annum
3 Interest rates can directly affect the timing and amount of a benefit claim for guaranteed minimum income benefits that allow the policyholder to annuitize at guaranteed rates

Exhibit 2: The value of withdrawal guarantees in zero, low and high interest rate environments



Long-term interest rate environment	Annual income	Total guarantee claims from age 80 to 100	Value of guarantee claims in today's dollars
0%	5,000	100,000	100,000
3%	5,000	100,000	42,420
7%	5,000	100,000	14,650

Guarantees are more valuable to policyholders when interest rates are low…

The value of the guaranteed income – i.e. the cost of providing those payments from the insurer's perspective – in current dollars varies considerably with the level of interest rates. We can also compare the value of variable annuities with other assets that provide secure retirement income, such as high quality bonds and traditional immediate annuities. When other assets are earning lower rates, a high guarantee on a variable annuity becomes relatively more valuable.

…and when investment returns are uncertain

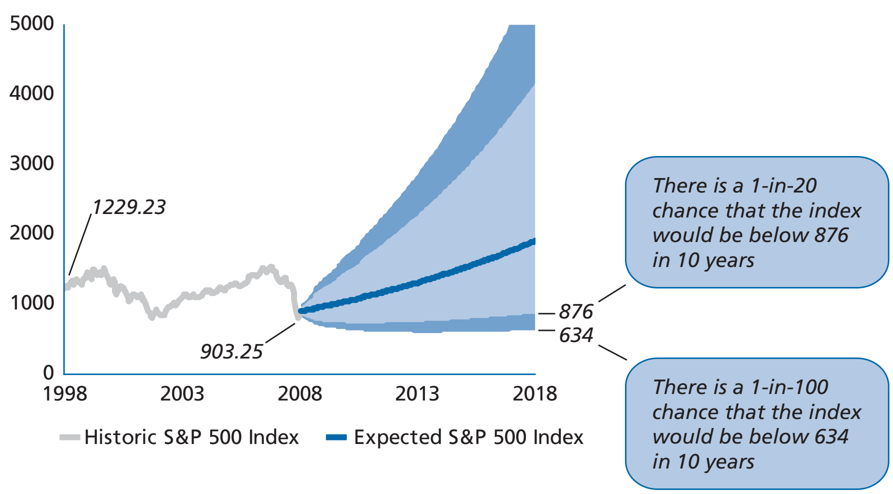
Guarantees offer insurance protection and hence are more valuable to consumers when times are uncertain. Similarly, the uncertainty in investment returns also drives the cost of insurance company risk management (e.g. hedging or reinsurance). We explore this in more detail later in the report.

Exhibits 3 and 4 illustrate the link between the uncertainty in investment returns, as measured by volatility, and the value of a variable annuity. Greater uncertainty means there is a wider range of potential future outcomes, both on the upside and on the downside. This greater potential for loss (i.e. payout under the guarantee) translates into a higher value being attached to the insurance aspect of the variable annuity.

Exhibit 3 demonstrates this concept for an "average" uncertainty environment where the volatility assumption is consistent with long-term historic experience. Here, the chance of the S&P 500 losing value over a 10 year horizon (2008 to 2018) is roughly 1-in-20 . While less likely, the 1-in-100 event sees the market declining almost 30%.

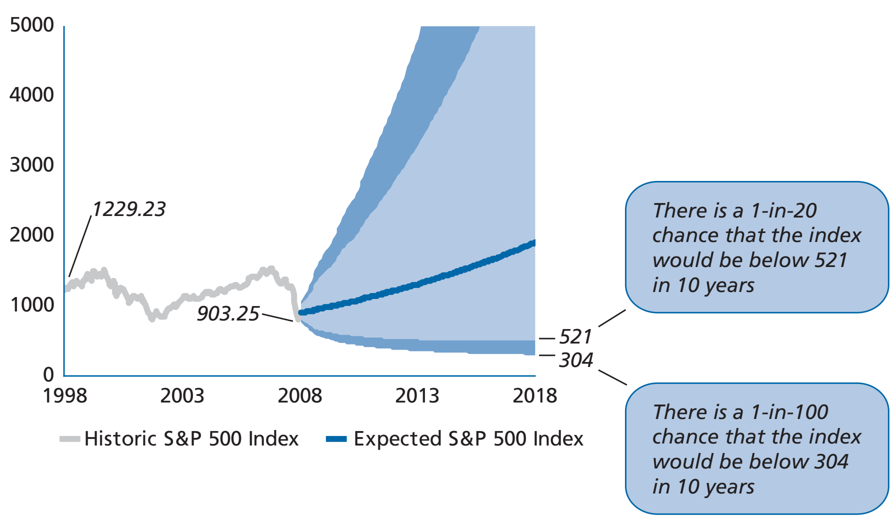
Exhibit 4 demonstrates the same idea for a "high" uncertainty environment where volatility is based on more recent "post credit crunch" conditions. In this case, there is a 1-in-20 chance that the market will fall almost 40% over 10 years. The 1-in-100 event is truly catastrophic as the market loses almost 70% of its value. Protection therefore becomes much more valuable in a high uncertainty world.

Exhibit 3: S&P 500 index projection in "average" uncertainty environment



Note: The S&P 500 index is assumed to return 7.5% per year on average. Volatility is assumed to be 15% per annum

Exhibit 4: S&P 500 index projection in "high" uncertainty environment



Note: The S&P 500 index is assumed to return 7.5% per year on average. Volatility is assumed to be 25% per annum

- Choices made by the policyholder can significantly affect the ultimate value provided by the variable annuity

Variable annuities provide insurance protection and asset growth potential, but they also afford liquidity and flexibility. The policyholder usually has considerable choice in terms of when and how to withdraw money, switch funds, make additional deposits, surrender the contract or exercise other discretionary options. Such flexibility can have a profound impact on the ultimate cost of providing protection against risk. As such, insurers must make prudent assumptions regarding customer behavior in designing and pricing products. Such assumptions are based on historic data, emerging experience and long-term expectations.

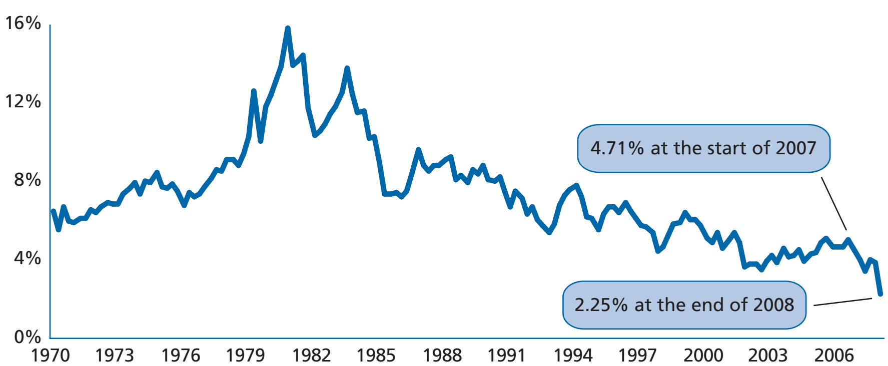
2008: Greatly depressing?

Nervous investors are driving long-term interest rates down to levels not seen since the 1940s…

Interest rates have plummeted

Given the large reductions in equity values, nervous investors have been flocking to the safety of Treasuries, driving interest rates to historic lows. From January 2007 to December 2008, the 10-year US Treasury yield dropped from 4.71% to 2.25% as seen in Exhibit 5.

Exhibit 5: 10-year US Treasury yield from 1970 to 2008



Source: US Federal Reserve Statistical Release H.15 (www.federalreserve.gov/releases/h15/data.htm)

…and Federal Reserve intervention may result in even lower rates

In December 2008, the target range for the federal funds rate was below 0.25%, the lowest level on record. The Federal Reserve was also considering unconventional tactics to decrease the cost of longer-term borrowing, such as buying Treasury bonds.

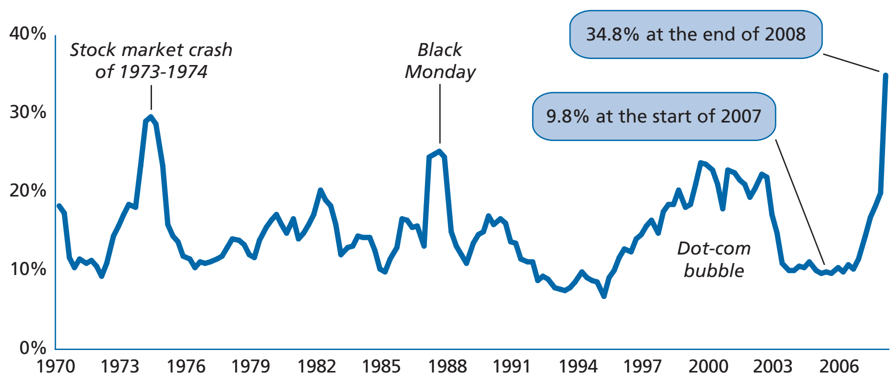
Uncertainty abounds

Insurers often use two common measures of market volatility to express the uncertainty in investment returns. The first measure is sometimes called “realized volatility” and is calculated from historic market data. The second metric is called “implied volatility”. It is not directly observable, but needs to be inferred from the cost of hedge instruments (derivatives) sold by investment banks.

Economic instability continues to create uncertainty in the equity markets

Consider the realized volatility[4] of S&P 500 index returns as shown in Exhibit 6: it climbed from 10% at the start of 2007 to almost 35% by the end of 2008. The VIX[5], a short-term measure of implied volatility that has become famous in recent months as the “fear index”, soared from 12% in early 2007 to 69% in October 2008. Whatever volatility measure is used, uncertainty has increased as economic instability persists.

Exhibit 6: S&P 500 realized volatility from 1970 to 2008



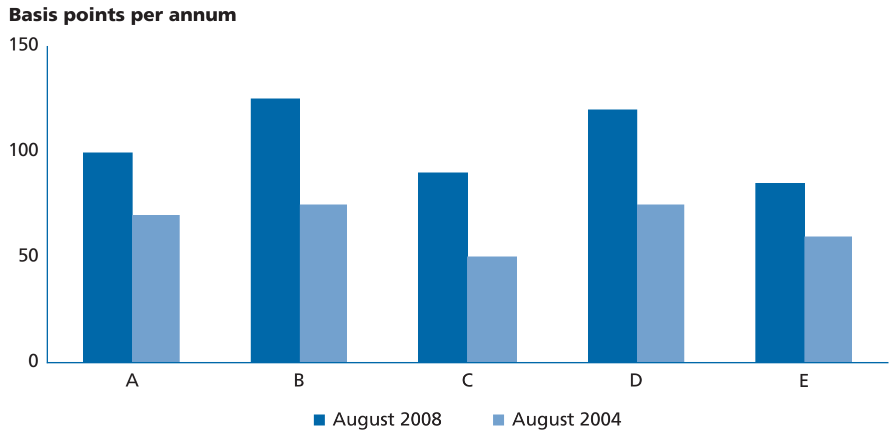
The reality of financial climate change

The combined impact of falling interest rates and greater uncertainty has made the guarantees more valuable to consumers and hence more costly to insurers. Exhibit 7 illustrates the change in industry economics. It shows the at-issue “break-even” rider[6] charges under different market conditions using representative industry assumptions. This charge is the annual rate at which the rider fees

4 Calculated at end of the month based on the index returns in the preceding 52 weeks
5 Long-term implied volatilities are more relevant for insurers and are highly correlated with the VIX, but much less variable
6 Variable annuity guarantees are often sold as “additions” or riders to the base policy

collected by the insurer equal the total expected guarantee claims, all expressed in today's dollars. If the actual rider fee exceeds this rate, the insurer can expect a profit.

Exhibit 7: Break-even rider charges in different market conditions



Source: Oliver Wyman analysis. A, B, C, D and E represent five popular products with lifetime withdrawal guarantees. The mix of policies for each product is assumed to be the industry average.

Current market conditions suggest that few of today's guarantees are expected to break-even

Interest rates and market volatilities as of August 2004 were close to historical averages[7] and most of the guarantees were profitable or close to break-even. However, only four years later, market conditions suggest that few of the products are expected to break-even.

A natural question arises when discussing the market environment: if variable annuities provide guarantees over the long-term, why do *current* conditions matter for pricing? Put another way, isn't the ultimate cost to the insurer affected by *future* fund performance? Understanding the answer requires an appreciation for how insurers manage risk. The three primary alternatives are shown in Exhibit 8.

Exhibit 8: Risk management alternatives for insurers

Self-insurance	The insurer retains the risk and establishes reserves and capital on its balance sheet to support the obligations
Reinsurance	The risk is transferred to other insurance companies, called reinsurers, for a premium
Hedging	Market risk is mitigated by the purchase of derivatives in the capital markets

Since the guarantees made by an insurer can extend over many years – even decades – the range of potential future outcomes[8] is an important consideration in product design, pricing and risk management. Rather than remain fully exposed to market, mortality

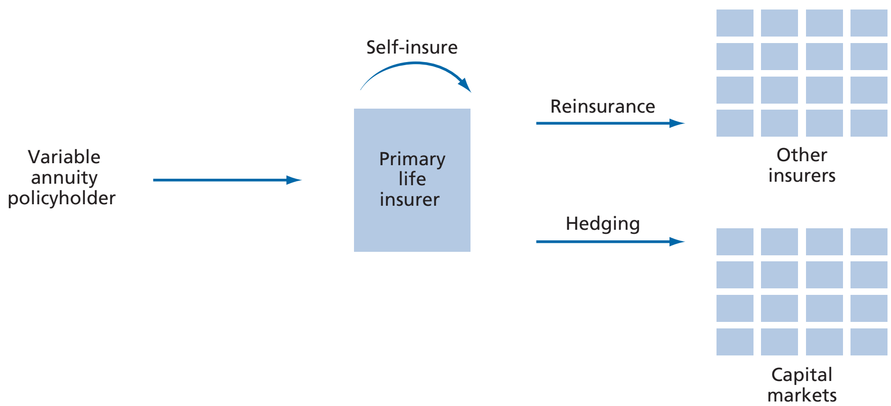
7 See Exhibits 5 and 6 for comparative market conditions over time
8 "Outcomes" are future realizations of the underlying variables (interest rates, equity returns, surrenders, withdrawals, mortality, etc.)

and policyholder behavior risks, insurers can seek some form of risk transfer through reinsurance and/or hedging. These arrangements provide greater spread of risk and ultimately can provide better protection to the customer. In practice, most prudent insurers adopt a combination of the risk management approaches mentioned in Exhibit 8.

Most prudent insurers adopt a combination of self-insurance, reinsurance and hedging

Exhibit 9 provides an illustration of the key parties to the risk management equation. For a fee, policyholders transfer longevity[9] and investment risk to the life insurer. Similarly, the insurer can transfer risk to a reinsurer for a premium. Both make use of hedging to reduce risks and as such try to reflect the costs of hedging in the rates and premiums they charge.

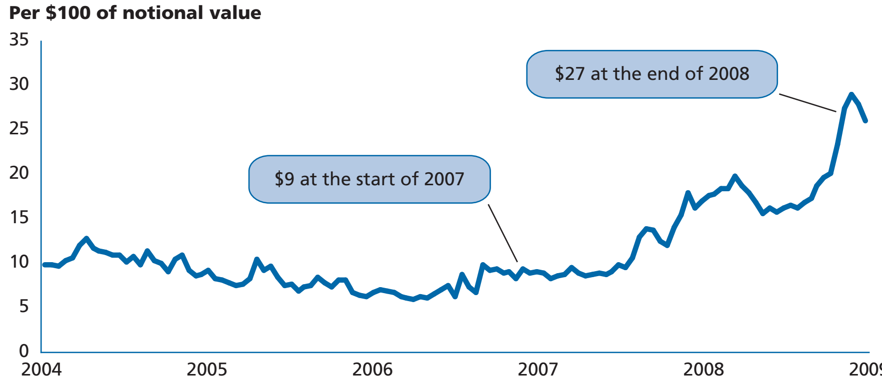
Exhibit 9: Risk transfer schematic for insurance



Put options are often used for hedging. A put option is similar to a guaranteed accumulation benefit: at maturity, it pays the amount by which the index level falls below the strike price[10]. Exhibit 10 shows the cost of five year S&P 500 put options since early 2004. These options are not perfect proxies for variable annuity guarantees, but they suggest that hedge costs for new business have tripled in the last two years.

9 Longevity risk is the risk of outliving one's savings or income. Longevity often introduces other risks, particularly the need for additional healthcare due to higher morbidity
10 The "strike price" is sometimes called "exercise price"

Exhibit 10: Cost of S&P 500 options from 2004 to 2008



Note: Five year European put options issued "at the money" (i.e. strike price = index level at issue)

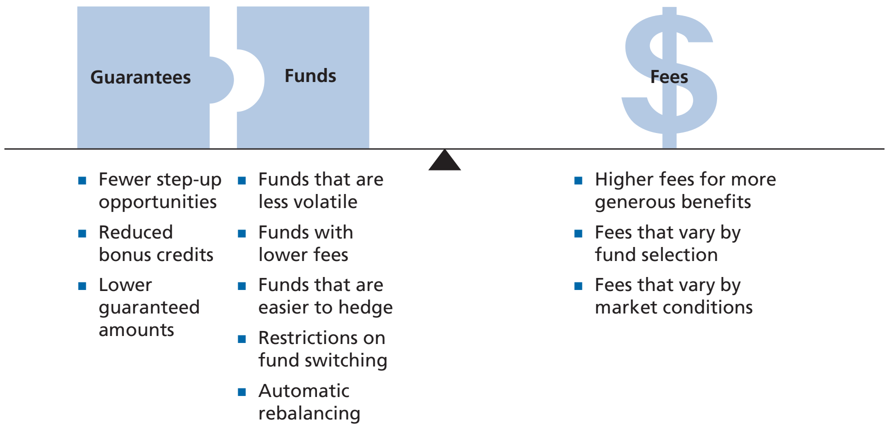
Finally, an insurer often cannot reinsure or hedge certain risks (or may choose not to do so). As such, capital will always be needed to support its obligations. Since current conditions influence our expectations for the future, capital requirements have also increased amid uncertainty and lower interest rates. As always, contributors of capital expect a fair return on their investment. This hurdle further amplifies the cost of variable annuity guarantees.

The evolving product landscape

The majority of the top selling designs on the market today offer guarantees that simply cannot be maintained at current fee levels. The industry has already started to react to the escalating costs posed by current economic conditions by adapting product design, increasing charges and pulling some products from the market. So far, changes have been incremental. However, soaring manufacturing costs and greater uncertainty will drive more fundamental changes.

Moving ahead, insurers must achieve a more sustainable compromise between product features (including guaranteed benefits), investment choices and the fees charged. Exhibit 11 illustrates this balancing act and highlights the potential changes for the next wave of products.

Exhibit 11: Variable annuity product changes



Variable annuities will re-emerge with simplified guarantees, revised fund offerings and restructured fees

We anticipate that significant changes will continue throughout 2009 and well into 2010. While insurers will opt for a range of product strategies, we see six principal areas of innovation:

- **Higher fees** – Undoubtedly there will be rate increases in the immediate term. However, higher fees will be of limited value. Heavy charges can critically impair the variable annuity's investment potential and there is a psychological fee barrier which customers simply will not cross. At some point other guaranteed and non-guaranteed products will look more attractive.
- **Reduced guarantees** – Modest reductions in benefit levels and other policy features such as bonuses and step-ups might be supportable at existing or slightly elevated fees. This would allow for continuity in current designs while other products are developed.
- **Simplified, lower cost products** – We expect to see straightforward, lower cost designs that use passively managed index funds. Such products can align the interests of all parties by clarifying the value proposition to customers and easing the risk management burden for insurers. Real growth potential will be coupled with meaningful, but more limited guarantees at reasonable rates.
- **More carrots and sticks** – Product innovation will continue along two competing lines whereby insurers seek to minimize the effects of unpredictable policyholder behavior. Some insurers will offer incentives (carrots) while others will impose penalties (sticks) to reward or discourage certain types of activity. At one end of the scale this could suggest more policy restrictions; at the other end, it could mean customers more evenly "pay for what they get".

- **Bundled designs** – Guarantees and other features have often been available "cafeteria style". This flexibility came at the cost of greater complexity. We anticipate new hybrid designs that bundle features together into "product solutions" with one "all-in" fee for the insurance/investment protection. This could simplify the sales process by allowing for better matching of products to customers.
- **Rebirth of fixed annuities** – The industry is likely to pay greater attention to annuity products with more predictable risks. The need for guaranteed retirement income, combined with recent market conditions, may re-open the doors for fixed and immediate annuities. Some customers will avoid market volatility and opt for stable income and favorable crediting rates relative to bank CDs.

Call to action

Immediate product changes are needed to bring policy fees, investment choices and guaranteed benefits back into alignment

Variable annuities need to evolve with the times as new realities emerge and expectations are re-formed. The combined impact of falling interest rates and increasing uncertainty has damaged the cost/benefit relationship for variable annuities. Immediate product changes are required to bring policy fees, investment choices and guaranteed benefits back into alignment.

The need for guarantees has never been stronger and variable annuities will remain an important part of most people's retirement portfolios. However, the new landscape spurs a call to action for insurers and advisors alike:

- Insurers will need to offer attractive products that provide long-term value at sustainable rates. This will be achieved by a more straightforward value proposition and a "solutions oriented" design that balances the insurance protection with investment potential.
- Advisors must tailor product-based solutions to their clients' needs in a world where "bigger is not necessarily better". In the face of increased uncertainty, this will require a more refined matching of products to specific customer savings goals and retirement needs.

Standing on the sidelines could mean lost opportunity, but the future is bright for those who can embrace the challenge and respond with innovation.

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