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Risk-Based Pricing—Risk Management at the Point of Sale

By Dominique Lebel

BY FAR, THE MOST COMMON primary pricing measure is the statutory internal rate of return (IRR). The 2008 Tillinghast Pricing Methodology Survey showed that this was the pricing measure used by 57 percent to 82 percent of respondents, depending on the product. No other pricing measure came close.

The statutory IRR pricing objective is based on achieving a rate of return in excess of the company's hurdle rate, where the hurdle rate is often based on a company's overall cost of capital. While statutory IRR is a useful pricing metric, it is not perfect.

The hurdle rate typically does not vary by product; but different products have different levels of risks. Does a product with a higher pricing IRR create more shareholder value than a product with a lower pricing IRR? Not necessarily—it depends on the risks inherent in each product.

Products are often priced under the implicit assumption that arbitrage opportunities exist. Asset risk premiums (e.g., credit spreads in excess of assumed defaults, and equity risk premiums) are capitalized and are treated as earned before insurers/shareholders are released from risk. If insurers believe that these arbitrage opportunities exist, why not just borrow at the insurer's credit rating and invest in riskier assets rather than manufacture and distribute insurance products?

Consideration should be given to pricing products such that all risks undertaken are measured in an objective and consistent way.

RISK-BASED PRICING

Risk-based pricing (also known as market consistent pricing) addresses some of the shortcomings of traditional pricing methods by building on modern financial and economic concepts. It differs from traditional pricing methods in the following respects:

- The discount rate is set to reflect the risks inherent in each product.
- Credit spreads and equity risk premiums are earned as insurers/shareholders are released from risk.
- The costs of options and guarantees are valued in a manner that is consistent with how they are valued in the financial markets.

Under market consistent valuation methodology, if a replicating asset portfolio can be found that exactly matches a set of liability cash flows, then the value of the set of liability cash flows is equivalent to the value of the replicating asset portfolio. This would involve discounting each cash flow with the discount rate that would be used to value the cash flow in the capital markets. An equivalent approach is typically used for practical purposes. Under this approach, the cash flows are risk-adjusted, such that all assets earn risk-free or near risk-free rates (e.g., swap rates) and all cash flows are discounted using these same rates (for stochastic simulations, risk neutral scenarios are used).

The use of risk-free or near risk-free rates is based on the assumption that policyholder liabilities are certain to be paid. However, an adjustment to the risk-free rate could theoretically be made for the insurer's own credit risk (i.e., allowing for the possibility that the insurer will default on its obligations). This is not common, because it results in a lower value of liabilities as the insurer's own credit risk increases.

Dominique Lebel, FSA, MAAA, FCIA, is a senior consultant at Towers Perrin in San Francisco, Calif. He can be reached at *Dominique.Lebel@towersperrin.com.*

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Other adjustments to the risk-free rate have been made in recognition of the recent dislocations in the markets using methods such as the minimum cost replicating portfolio method. This method proposes that where there are alternative replicating portfolios that can be constructed for a liability that has largely predictable cash flows, such as a payout annuity liability, the cheapest replicating portfolio may be used to value the liability. For example, a combination of corporate bonds and credit default swaps is one potential minimum cost replicating portfolio. This is currently an evolving topic.

Typically, for each product, a value of new business (VNB) is determined which reflects the value to shareholders created through the activity of writing new business.

VNB = Present value of future profits after tax – time value of financial options and guarantees – frictional costs of required capital[1] – cost of non-hedgeable risk.[2]

Risk-based pricing provides a robust, transparent and objective economic perspective on new business profitability that is consistent across products. If the VNB is greater than zero, the return is greater than the market price of the risks undertaken. A VNB less than zero will reduce shareholder value.

While a positive VNB is necessary to increase shareholder value, it may not be sufficient. Product charges (e.g., premiums) should be set such that the overall value of new business generated (based on anticipated sales volume) maintains the franchise value of the company, which could be approximated as the market capitalization of the company less its embedded value. This is where management has a significant role to play. A VNB of zero determines the minimum price for taking risk, but the final product charge requires management input. For example, product charges need to be balanced with sales volumes and, for a company that is capital-constrained, capital efficiency needs to be factored into the new business pricing process.

Additional metrics commonly used include:

- Profit margin: VNB/PVP, where PVP equals the present value of premiums.
- Implied discount rate: The discount rate such that the traditional value of new business equals the VNB. This is sometimes used to compare the relative level of risk between products. A product with a higher implied discount rate is riskier than a product with a lower implied discount rate.

WINNERS AND LOSERS

Some products will perform better than others under a market consistent framework. Results will vary depending on:

- The level of guarantees (e.g., minimum interest rate guarantees or variable annuity/segregated fund guarantees).
- The amount of asset risk borne by insurers/shareholders (e.g., the credit quality of assets).
- Whether the product allows management discretion to mitigate adverse experience (e.g., ability to adjust future premiums, credited rates or policyholder dividends).

This makes sense. Everything else being equal (e.g., assuming the same product charges), a product (Product A) with more guarantees, more asset risk and without management levers to mitigate adverse experience ought to be considered more risky than a similar product (Product B) with opposite characteristics. The pricing metric used should show a less favorable result for Product A relative to Product B. This is the case under a market consistent framework.

Table 1 splits common products into two categories: those that show an increase in the profit margin when moving from a traditional approach to a market consistent approach and those that show a decrease in the profit margin.

FOOTNOTES:

1 Typically includes costs related to investment expenses and taxation.

2 Typically equal to the present value of between 0 percent to 6 percent per year of the projected non-hedgeable risk capital.

"Recent developments have motivated many companies to look at the profitability of their products under a market consistent framework."

TABLE 1
Typical Winners and Losers:
Risk-Based Pricing vs. Traditional Pricing

Winners	Losers
Term Insurance	Payout Annuities
Short Term Group Life and Health/Employee Benefits	Fixed Annuities
	Variable Annuities/ Segregated Funds
Universal Life/Variable Universal Life*	Universal Life/Variable Universal Life*

* Depends on orientation of product (accumulation vs. protection), cost of insurance structure, investment options available and level of guarantees.

While risk-based pricing should be an important part of product design and pricing strategy, it should not necessarily be the only measure used. Other approaches, such as statutory IRR, for example, can provide useful insights into the potential future profitability of a product.

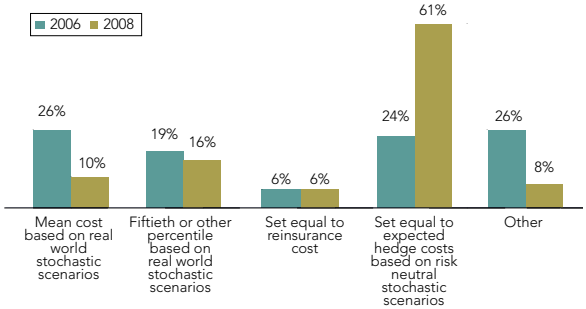
RISK-BASED PRICING IS NOT NEW, IS INCREASILY BEING USED AND ITS USE IS EXPECTED TO CONTINUE TO INCREASE

As shown in Chart 1, the approach used to set the cost of guarantees on variable annuity business has evolved from a deterministic real-world approach (many years ago) to a stochastic real-world approach (a few years ago) to a stochastic risk-neutral approach (where we were in 2007 and where we are today).

Chart 1:

Method Used to Determine Cost of Guarantees on VAs

(Percent of Responses)



Note: Companies selected multiple responses if they used different methods for different guarantees.

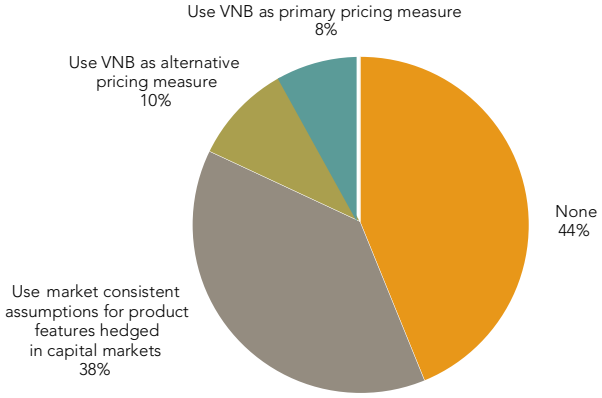
Source: 2006 and 2008 Tillinghast Pricing Methodology Surveys (i.e., methodology used to price products in 2005 and 2007)

So, risk-based pricing is not new. As shown in Chart 2, some companies were using risk-based pricing for products other than those hedged in the capital markets (i.e., variable annuity guarantees in most cases), but its use was not prevalent in the pricing of 2007 products. If this approach is considered best practice for setting costs on variable annuity guarantees, why wasn't it broadly used for other products?

Chart 2:

Use of Risk-Based Pricing Methodologies or Assumptions

(Percent of Responses)



Source: 2008 Tillinghast Pricing Methodology Survey (i.e., methodology used to price products in 2007)

While risk-based pricing was not broadly used in 2007 for a wide range of products, this is gradually changing as market consistent techniques make their way into financial reporting, economic capital calculations, merger and acquisition and securitization transactions and asset-liability management. For example,

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- U.S. GAAP contains standards related to fair value measurement and options (FAS 157 and 159).
- The European Insurance CFO Forum Market Consistent Embedded Value Principles,[3] which were published in June 2008, require member companies to publish year-end 2011 embedded values and values of new business using market consistent techniques.
- Many companies, domestic and international, are using market consistent methodologies to determine economic capital (a la Solvency II).
- More and more merger and acquisition and securitization transactions are being valued using both traditional and market consistent techniques.
- Some companies are embracing market consistent techniques because they believe these methods provide useful insights into asset-liability management.

The above developments have motivated many companies to look at the profitability of their products under a market consistent framework. As a result, some of these companies have made or are in the process of making changes to their products and/or pricing. Other companies have embraced risk-based pricing for its own sake. A few use it for incentive compensation to align compensation with risks undertaken.

IFRS Phase II, which is based on a fair value approach, could become required in 2014 in the United States and in 2013 in Canada. Consequently, the use of risk-based pricing should continue to increase in North America.

THOSE THAT ACT EARLY CAN GAIN A COMPETITIVE ADVANTAGE

Risk-based pricing could be used to develop strategic options. Companies could target products where current product charges are greater than prices required by the market. Companies moving first would gain leverage by targeting profitable products. Eventually inefficiencies will be corrected as competitors catch up.

Companies could also use risk-based pricing analyses to better understand the relative risks of their products. Depending on a company's risk appetite, measures could then be taken to de-risk certain products by increasing product charges or making changes to the product design. Product design changes could include decreasing interest rate guarantees, making variable annuity/segregated fund guarantees less rich, introducing market value adjustments upon surrender and changing premiums from a guaranteed basis to an adjustable basis.

In addition, companies could use risk-based pricing techniques to protect themselves against similar tactics used by competitors.

CONCLUSION

Risk-based pricing addresses some of the shortcomings of traditional pricing methods by providing a framework for understanding the tradeoffs between shareholder risks and rewards using a robust, transparent and objective economic methodology that is consistent across products. The use of risk-based pricing has recently extended beyond variable annuity guarantees to a wide range of life, health and annuity products. More and more companies are looking at the profitability of their business under a market consistent framework motivated by FAS 157 and 159, MCEV Principles, economic capital calculations, insurance company transactions, asset-liability management and IFRS Phase II. Companies that are among the first to take action may benefit. ✦

FOOTNOTES:

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