

AUTHOR'S REPLY TO DISCUSSION

Abstract

The actuarial theory of insurance risk loads has followed a meandering course. Actuaries have approached this subject with different perspectives, contributing important but seemingly unrelated insights. Todd Bault's masterful discussion of "Risk Loads for Insurers" demonstrates the connections between the different approaches, thereby laying a firm foundation for a unified theory.

Bault first shows the consistency among the risk load procedures proposed by Rodney Kreps, Stephen Philbrick, and Sholom Feldblum; he concludes with several issues that warrant further analysis. This reply follows a similar format, beginning with the current applications of risk loads and risk margins, and then addressing three of the issues that Bault raises.

1. RISK LOADS: FROM THEORY TO PRACTICE

"The show has just begun," says Bault, and he foresees an exciting future for this drama. He is correct; indeed, the future has already begun.

Twenty years ago, when Robert Miccolis [4] wrote his seminal paper, "On the Theory of Increased Limits and Excess of Loss Pricing," the subject of risk loads was considered too theoretical for most actuaries. The practicing actuary was busy determining personal automobile or workers compensation rates and relativities. Only a few rating bureau actuaries had the leisure to devise risk adjustments for increased limits factors.

Now even practicing actuaries deal with risk loads in their day to day work.

Economic Reserves

Reserving once consisted simply of determining a point estimate of an undiscounted indication.

Now companies ask, “What is the economic value of the reserve?” or “What is the true net worth of the company?” Robert Butsic [1] has argued that the answers to these questions require the consideration of risk margins in the reserves or risk adjustments to the loss reserve discount rate. Discounting the reserve at a risk-free rate gives a result lower than the true economic value. The American Academy of Actuaries, in Standard of Practice Number 20, “Discounting of Property and Casualty Loss and Loss Adjustment Expense Reserves,” Section 5.5, follows Butsic’s lead:

The actuary should be aware that a discounted reserve is an inadequate estimate of economic value unless appropriate risk margins are included.¹

Quantifying loss reserve risk margins is half the task; the other half is properly reporting them in financial statements. Stephen Philbrick [6] has recently proposed accounting procedures for loss reserve risk margins. If loss reserve discounting becomes accepted accounting practice—as seems likely for property/casualty companies—the treatment of risk margins will become a burning issue.

¹Butsic uses a risk adjustment to the discount rate instead of a risk load in the reserves themselves. The AAA Standard of Practice No. 20, Paragraph 5.5.2, considers both methods acceptable: “Explicit margins may be included as an absolute amount and/or through an explicit adjustment to the selected interest rate(s).”

Pricing

When making rates for first-dollar coverage in a line of business characterized by high frequency/low severity losses, such as personal automobile insurance, there is little need for risk loads.² In commercial lines, however, alternative products are now emerging in which insurers are providing high-risk layers of coverage. In workers compensation, for instance, deductible credits on large dollar deductible policies accounted for about \$5 to \$6 billion in 1994.³ The risk load is the dominant concern in the pricing of large dollar deductible policies, since the risk to the insurer is great yet marketplace competition is severe. The transition to alternative products in the commercial lines of business has been so rapid that pricing actuaries are now scrambling to properly estimate risk loads.

Valuation

The underlying premise of the NAIC's new risk-based capital requirements is that the capital needed by an insurer depends on the risks faced by that insurer. But how might we quantify the "risks faced by an insurer"? The quantification of the variance in the loss estimate, which is the stepping stone for estimating pricing and reserving risk loads, has been extended by Robert Butsic into the quantification of the "expected policyholder deficit" and the implied capital requirements [2]. The requisites for an insurer's "government affairs" actuary were once no more than a good sense of humor and an endless patience for bureaucracy. Now the government affairs actuary must understand asset risks, loss reserve margins, and covariance adjustments (and still retain the humor and the patience).

²See Woll [7], who shows that the process variance on this business—which the risk load is intended to hedge against—is insignificant.

³See NCCI [5, p. 2]. In a large dollar deductible policy, the insured reimburses the insurer for losses up to the deductible amount, which generally is \$100,000 or more. The insurer provides true excess coverage on losses exceeding the deductible amount. The deductible credit is the difference between the premium for the large dollar deductible coverage and the premium for corresponding first-dollar coverage.

2. THE MARKET AND THE ACTUARY

“What is the industry leverage ratio?” asks Bault. “This is a very important question that....Feldblum appears to have overlooked.”

Two years ago, Feldblum and Butsic were discussing this question. One needs a starting point, a rock to stand upon, from which all else can be derived. If one knows the appropriate industry leverage ratio for all lines combined, then one can determine leverage ratios for the individual lines of business.

“Tell me the expected policyholder deficit ratio that the company or the industry is comfortable with,” said Butsic, “and I will tell you the proper leverage ratio.”

“No,” said Feldblum. “Managers and investors are not fluent in our discourse of risk loads, probability of ruin, or policyholder deficits. Yet given free markets, they invest funds where returns are most promising. For pricing purposes, the market is the ultimate arbiter of needed capital, not the actuary. The actuary’s task is to understand the raw force of the market, not to turn it back.”

In other words, the existing industry leverage ratio for all lines combined is our best estimate of the “proper” leverage ratio. If the leverage ratio is too high, investors will supply more capital. If it is too low, investors will take their capital elsewhere.⁴

Of course, not all insurers are equally subject to investor expectations. The capital structures of many mutual insurance companies can be explained better by agency theory than by modern portfolio theory.⁵ Even for stock companies, the judgments of

⁴Of course, pricing is not the only determinant of leverage ratios. Regulators may demand lower leverage ratios for financial solvency purposes. Here the marketplace is at best an imperfect arbiter.

⁵Agency theory seeks to interpret the business strategies of company managers, who are agents of the stockholders or owners. In a mutual insurance company, for instance, will managers use excess surplus to pay policyholder dividends, increase employee salaries, or invest in new business operations?

the capital markets seem inexorably slow. New infusions of capital and the demise of inefficient insurers may stretch out over decades.

There are cogent arguments for both Butsic's and Feldblum's viewpoints. Butsic is skeptical of the acumen of the marketplace, and relies more on actuarial expertise. Feldblum is skeptical of the acumen of actuaries, and relies on the power of the marketplace. Bault comes down on Butsic's side, though without endorsing any specific procedure. But his basic premise is correct: This is a central issue in estimating risk loads.

3. INDUSTRY LEVERAGE VERSUS COMPANY LEVERAGE

"In my analysis," says Bault, "I specifically assumed that the existing large portfolio was the industry portfolio, rather than an individual company portfolio...Although...an insurer may possess additional risks versus other companies, I don't see why an insured would pay for this difference."

Bault is correct. Pricing begins with the market, whether for insurance companies or for other firms. Company-specific analysis tells you only whether the prices achievable in the marketplace are adequate for your company. If the actuary says, "Our firm needs greater returns, so let us raise our premium rates," the firm will succeed only in losing market share.

4. QUANTIFYING THE RISKS

"Some of the risk," says Bault, "cannot be passed on to insureds—for example, a period of deliberate underpricing to gain market share. This is something that a company inflicts upon itself, and I don't see how one can expect future policyholders to accept risk loads computed using past 'price volatility.'"

Do companies deliberately underprice during underwriting cycle downturns, perhaps to consciously inflict pain upon them-

selves? Actuaries are aware of the premium inadequacies during soft markets. Why don't they just set higher rates?

Oh, the actuaries recommend higher rates, demonstrate the pressing need for rate increases, and warn of the dangers of inadequate premiums. (They are a garrulous lot, these actuaries.) But actuaries can only indicate rates; the marketplace sets the prices.

Individual companies have little choice. Companies that strive to keep rates adequate—when rates plummet about them—end up with adequate rates and no insureds. Underwriting cycles stem from the business strategies of incumbent insurers to maximize long-term profits.⁶ Intelligent insurers learn to “ride the cycles,” so that they partake in the industry's profits when times are good but minimize the losses when times are bad. Premium fluctuations are an unavoidable risk of insurance operations. Risk loads are needed for them just as they are for random loss fluctuations.

5. CONCLUSION

As Bault points out, risk loads are becoming a staple of actuarial work, yet many issues are still unresolved. Thanks to his discussion, however, it should be easier to tackle the remaining problems.

⁶See Feldblum [3] for a comprehensive analysis of the nature and causes of underwriting cycles.

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