



AMERICAN ACADEMY *of* ACTUARIES

Comments from the American Academy of Actuaries' Life-Risk Based Capital Committee on a Response Letter Commenting Upon the Proposed Change to the Treatment of Common Stock in the Life Risk-Based Capital Formula

Presented to the National Association of Insurance Commissioners' Life Risk-Based Capital Working Group

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The following comments present the response of the American Academy of Actuaries' Life Risk-Based Capital Committee to the February 15, 2001 letter from Richard Kopcke to Larry Gorski (Chair of the NAIC's LRBC Working Group) commenting upon the proposed change to the treatment of common stock in the life risk-based capital formula.

Mr. Kopcke's letter focuses on two aspects of the proposed changes. The first aspect relates to the use of a *beta* of one for private equities. The second aspect relates to the assumption of zero correlation between bonds and common stock.

1. Private Equities

Mr. Kopcke's letter makes the following observations on private equities:

“Assigning equities that do not trade in public markets (private equities) a *beta* of one, particularly without reference to an insurer's other assets, could understate the risk that a life company assumes by holding common stock.

Private equity can pose considerable risk, especially when insurers' traded stocks carry a *beta* that exceeds one. During the last 20 years, the profits of many corporations that receive private, venture, mezzanine, incubator, or merchant banking funding have been highly cyclical. On top of this, the prices that financiers are willing to pay per dollar of prospective earnings of these corporations also have been highly cyclical. Consequently, the value of a portfolio of private equities and its return vary more than the value and return of a portfolio with a *beta* of one. This is reflected in indexes of traded stocks that are weighted more toward younger companies, those that have emerged more recently from private financing. The volatilities of the NASDAQ indexes or of the Russell and S&P small cap indexes, for example, are significantly higher than the volatilities of the S&P 500 or the Wilshire 5000. The general booms and busts in initial public offerings also have testified to the higher-than-average *beta* for private equities. An insurer may dilute its risk from private equities by holding a substantial portfolio of traded stocks that resemble the S&P 500. When it holds a portfolio of traded stocks with a higher *beta*, however, it generally cannot avoid recognizing that the *beta* for private equities exceeds one.”

Response

The basic premise of the Committee's approach is that the appropriate way to measure risk for common stock is at the portfolio level. The volatility of an individual stock or subportfolio of stocks is of relevance only if it contributes to the volatility of the insurer's total portfolio of common stock. If the insurer's portfolio is well diversified then all that counts is its *beta*. If the insurer's portfolio is concentrated in a private equities or in some other corner of the stock market with high volatility and low *beta* then a *beta* adjusted factor will understate the risk. The Committee proposal recognizes this concentration risk for single stocks, but the Committee chose not to attempt a more generic measure of concentration because the design and quantification of such a measure requires huge volumes of data. Moreover, the Committee does not believe that insurers were typically exposing themselves to concentration risk except the type arising from single stocks.

The distinction between volatility and *beta* is important when evaluating the suggested proxies for private equities. While the Russell 2000 and S&P Small-Cap and Mid-Cap Stock Indices are more volatile than the S&P 500, most of that excess volatility is not associated with movements in the S&P 500. Each of the small stock indices has a *beta* of about .85 and the mid-cap index has a *beta* of .97, in all cases measured over the period 1991 to the present. On the other hand, the high volatility in the NASDAQ Composite is associated with a high *beta*, which is about 1.37 measured over a ten-year period and even higher over more recent periods. Thus, one's choice of a publicly traded proxy for private equity can have a significant influence on the conclusion. In the judgment of the investment departments that the Committee contacted, private equities are most similar to the mid or small cap indices, which would indicate a *beta* no higher than one.

A more direct measure of the performance of private equities can be obtained by using the private equity index maintained by Venture Economics which index is widely used by the industry to benchmark the performance of such equity investments. While it is not a transaction-based index, the valuation procedures used are not unlike those actually used by insurers to value their private equity investments for annual statement purposes. This index exhibits a *beta* of only about .13.

At this point the Committee feels that the preponderance of the evidence points to a conclusion that the assumed *beta* of one for private equities is conservative, but it also recommends that this conclusion should be reviewed periodically as better evidence becomes available.

2. Covariance Formula

Mr. Kopcke also takes exception to the assumed zero correlation between common stock and other types of investment. He argues that this is unsupported by the data and he also states his worry since it would result in a significant reduction in the industry's overall RBC requirements and a significant shift in the marginal capital requirements associated with common stock investments.

The Committee agrees that the proposal will have a significant effect on the aggregate and marginal RBC requirements, but is of the opinion that such changes are appropriate as long as the assumed zero correlation is consistent with actual experience. Therefore, this response will focus on Mr. Kopcke criticisms of the empirical basis for the assumed zero correlation.

Criticism One – The Committee's approach, which focuses on the correlation of defaults and common stock returns, is inappropriate since insurers are exposed to credit losses on their fixed income portfolios even in the absence of defaults.

Quoting from Mr. Kopcke's e-mail to Larry Gorski dated Feb. 16:

“...We had a similar discussion in banking during the '80s. S&Ls and some banks held loans, which they planned, not to trade. Consequently they contended that the statutory value of their assets, liabilities, and capital depended on defaults only -- the securities would be worth their face value since they'd be held to maturity. This was true. But the fate of the institutions rested on their ability to offer a competitive return on their liabilities. Though their statutory accounting showed no losses of capital -- their earnings did not remain competitive. i.e. their

competitors could book new business selling the same liabilities, buying the same assets, offering more attractive yields while earning an adequate risk-adjusted return. The losses of capital that the "older" institutions might have booked by using current value rules did not vanish – they accrued more slowly in terms of inadequate risk-adjusted returns. This is a kind of corollary to the no free lunch principal.

I realize the story is different for insurers, but is the principle different? A lifeco holds many class 2 bonds that have become class 4 or 5 as a result of the general erosion of credit ratings. Interest rates also might have risen. What return can it offer on their policies' cash values prudently? The company might not be at the mercy of "hot money" liabilities, but booking new business to the general account would not be easy if the competition can earn better returns for the risk. It can offer competitive prices only by sacrificing earnings and the accumulation of capital. How does the lifeco's own risk management system regard its position? How should it?

I simply offered the observation that most professional portfolio managers and risk managers (pensions, endowments, etc.) now consider the correlation of the market and credit risks of bonds with stocks at some level in order to keep a limit on their exposure....”

Response

The types of non-default risk described by Mr. Kopcke would be characterized as C-3 risk in the context of the RBC formula for life insurers. This risk is dealt with through the actuarial opinion that is required in connection with the insurer's reserves and the C-3 sections of the life formula. Since the mismatch risk is provided for elsewhere, it is appropriate to assume that insurers will be able to hold their fixed income investments until maturity or default when quantifying the C-1 risk and, therefore, in the original C-1 modeling this risk was derived by focusing on defaults and, similarly, in the analysis underlying the present recommendation the correlation between this risk and other types of asset risk is quantified using default data.

Criticism Two – There is empirical data supporting higher assumed correlations, and there are also theoretical reasons to expect higher correlations.

Quoting from Mr. Kopcke's Feb. 15 comment letter to the NAIC:

“Over the past 20 years, the average correlation between the real yields on bonds and stocks was 0.8 (see the attached chart).¹ Capitalization rates for commercial properties also tended to vary in concert with the real returns on bonds and stocks.

The correlation between stocks' yields and credit risk also can be high. In view of the first bullet, this correlation considers more than defaults. Ratios of

¹ Both the earnings-price ratio and the nominal return on bonds less the expected rate of inflation are real yields. The chart shows the yields quoted in financial markets (required returns) rather than holding-period yields (realized returns). The difference between required and realized returns can be significant. When investors require higher returns, realized returns tend to fall as the prices of existing assets fall. During 2000, for example, required yields on stocks rose, while realized returns fell.

downgrades to upgrades of credits (including commercial mortgages) as well as yield spreads among credits of different quality can vary with stocks' yields, particularly when the prospects for corporations' profits are changing.

There are good reasons to expect a high correlation. The risk premium required of a company's bond is not independent of the risk premium required of its stock, because the company's net revenues back both. Also, when investors require greater risk premiums or risk-free rates of return, they tend to require higher returns of all their assets, both bonds and stocks."

Response

As stated in the response to criticism one, the Committee believes that the appropriate correlation to use is that between the default experience of fixed income investments and the returns of the stock market. Even if one believes that in the case of fixed income investments one should focus on the market effect of changing credit spreads the correlation cited above is at least one step removed from the relevant observations, a fact alluded to in the footnote. The actual return on common stock will be a function of the actual change in earnings in addition to changes in the P/E ratio. While there is some reason to believe that earnings will track expected inflation, such tracking will be at best imperfect. Such imperfect tracking means that the relevant correlation is significantly lower than the 80% correlation cited in Mr. Kopcke's letter.

Criticism Three – Correlations change over time and therefore conservatism argues for the choice of a higher assumed correlation rather than a lower one.

Quoting from Mr. Kopcke's Feb. 15th letter:

"The correlation can vary with economic conditions. It will be higher when general market factors vary most – when investors' optimism about the future changes greatly, as in booms and crashes. It will be lower when particular market factors vary most – taxes or prospects of inflation change greatly.

The issue seems not to be the right choice for the correlation – any single number is not correct for all time – but the choice of a value that provides insurers and their customers an adequate margin of protection most of the time. The risk from choosing a correlation that is too low, particularly in times when assets' returns fall well below prior expectations, probably exceeds the risk from choosing a correlation that is too high. In other words, should the prospects for the future returns on our capital assets deflate greatly, depressing the values of corporate bonds and stocks, the assumption of a correlation of zero would both be too low and provide too little protection."

Response

The Committee used relatively long periods in its calculation of the correlations to be used in the proposed formula. Specifically, it used annual observations over a period of decades. As a result, any tendency for short-term correlations to rise during periods of economic distress should automatically be reflected in the correlations used by the Committee.