

Report on the Treatment of Common Stock in the Life Risk-Based Capital Formula

Presented to
NAIC Life Risk-Based Capital Working Group

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by
American Academy of Actuaries
Life Risk-Based Capital Task Force
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Preface

This report recommends a change in the covariance treatment for common stock in the life risk-based capital formula. The *Executive Summary* briefly describes the differences in approach between the property/casualty formula and the life formula, and then goes on to discuss in detail the Task Forces review of the correlations between common stocks and other asset types. The section then details the impact the recommended change will have on life insurers' risk-based capital ratios. The next section, *Common Stock Factors*, describes discussions the Academy Task Force had with regard to the differences between the actual common stock factor for property/casualty and life, and our rationale for not recommending a change. Finally, the *Next Steps* section recommends further study of a different approach to assessing asset risk within the formula.

Executive Summary

This report is the Academy's response to a March 1997 request received from the NAIC Life Risk-Based Capital Working Group to examine the differences in treatment of unaffiliated common stock between the property/casualty and life risk-based capital formula. The request noted two major differences between the formulae: (1) the factor for unaffiliated common stock is 15% in the property/casualty formula while it is 30 % in the life formula, and (2) the covariance formula for property/casualty insurers treats the risk from common stock as being independent of the risk from fixed income investments while the life formula treats the risk as being perfectly correlated to the risk from fixed income investments.

The Academy Task Force finds that the risk from common stock is indeed independent of the risk from fixed income investments and therefore recommends that the covariance treatment for common stock in the life formula be modified to treat the common stock risk accordingly. Specifically we recommend that the Life Risk-Based Capital Working Group adopt the following change for unaffiliated common stock and affiliated non-insurance common stock in the Life RBC formula, effective for 1998 filings:

- Split the current C1 category for asset risk into two separate categories C1 - common stock (C1cs) and C1 - other asset risk (C1o). The C1 - common stock element would constitute a new squared term in a revised covariance formula:

$$RBC = C0 + C4 + \sqrt{C1cs^2 + (C1o + C3)^2} + C2^2$$

- The C1-common stock category would include
 - unaffiliated common stock including unaffiliated common stock held in Schedule BA partnerships, and
 - common stock of affiliates other than insurance company affiliates subject to risk-based capital.
- The C1 - other asset risk category would include all risks currently in the C1 category other than those in the C1 - common stock category enumerated above.

The change in the covariance formula will result in a reduction in the overall risk-based capital requirements for life insurers averaging about 11% for unaffiliated common stock plus a not-determined but smaller amount for affiliated non-

insurers. The impact on individual insurers varies according to the proportion of the insurer's portfolio invested in common stock.

The task force also examined changing the factor used for common stock including the possibility of a beta adjustment, but has decided against recommending any change in the factor at this time.

Finally, the task force discussed the desirability of subsuming the current C1 stock factor in a calculation based on projections of cash flow using the general approach currently under development by the C3 (interest rate risk) subcommittee. This general approach would involve projecting assets and liabilities under various scenarios for the financial markets in order to develop a factor that covers both the interest rate risk and the risk associated with volatility in the equity market. Such an extension of methodology will be reviewed as Phase 2 of the Academy task force's C3 project.

Covariance Formula

Background

Current Life Insurance Covariance Treatment

The technical resource group that developed the life risk-based capital formula chose to treat the covariance adjustment (i.e., the adjustment to account for the diversification of risks) differently at the portfolio level and at the company level.

- At the portfolio level, the technical resource group attempted to set the capital level for each category of fixed income investment so that it would provide between 90% to 92% coverage of default losses in that category, on the assumption that the sum of the C1 requirements for all fixed income categories would result in total capital for the larger, diversified portfolio covering up to 95% or more of default losses.

The technical resource group attempted to set the capital level for common stock close to the 95% confidence level. The factor for other equity assets such as real estate were set similarly.

- At the company level, the technical resource group recommended an explicit covariance adjustment for the combination of the C1, C2 and C3 risks that is statistically equivalent to assuming that the C1 and C3 risks occur simultaneously, while the C2 crises occur at a completely random time with respect to the other risks. Specifically the C1, C2 and C3 risks combine using the following formula.

$$\sqrt{(C1 + C3)^2 + C2^2}$$

Property/Casualty Covariance Treatment

The property/casualty formula contains a much more elaborate adjustment for covariance than the life formula. There are six elements under the radical each of which is assumed to be independent of the other. Two of these risks are R_2 covering equities other the insurance affiliates and R_1 covering fixed income items. This treatment was recommended in a Feb. 26, 1993 report prepared by the Actuarial Advisory Committee to the NAIC Property/Casualty Risk-Based Capital Working Group. To justify the assumed independence of R_2 and R_1 the advisory group examined the historical correlation between the returns on common stock and the return on bonds over the period from 1926 to 1989 which the advisory committee found to be 14%. Since the advisory group desired a simple formula

and, furthermore, thought that the square root formula overstated the risk, they chose to assume no correlation between stocks and bonds.

While the advisory group focused only on bond and stocks, the formula makes provision for other types of assets. Mortgage loans are included with bonds in the fixed income element, R_1 . The equity component includes a number of items, specifically:

- common stock of affiliates other than U.S. insurance company affiliates subject to risk-based capital and alien insurers,
- preferred stock of affiliates other than U.S. insurance company affiliates subject to risk-based capital and alien insurers,
- unaffiliated common stock,
- unaffiliated preferred stock,
- real estate,
- Schedule BA assets,
- aggregate write-ins for invested assets, and
- asset concentration risk-based capital for equities.

Discussion of the Recommendation of the Task Force

The original life formula was developed without much consideration of the issue of covariance between equity and fixed income investments. Since the C1 amounts arising from an insurer's equity investments and fixed income investments are simply summed this means statistically that the correlation is assumed to be one. The original life formula also assumes, as was mentioned above, that C1 is perfectly correlated with C3 but uncorrelated with C2. Based on studies made of the historical performances of these assets, described in more detail later in this paper, the new recommendation made here assumes that common stock is uncorrelated with both C2 and C3.

The task force reviewed the correlation calculations underlying the property/casualty formula and decided that they were not directly relevant to life insurers since the property/casualty formula equated risk with market volatility. While this is appropriate for common stock, it is inappropriate for fixed income investments as they are carried in the statutory statements of life insurers, since market volatility is only reflected in the statement value of the such an investment when it is in or near default. Therefore the task force chose to use default data to quantify the risk for fixed income investments.

The following five sections describe the task force's examination of correlations between the default rates for fixed income investments and the annual returns for equity investments as they relate to the recommended change in covariance treatment.

Bonds versus Unaffiliated Common Stock

Moody's Investor Service agreed to provide the task force with annual default data on the universe of bonds rated by Moody's for the years 1926 to 1996 broken down by rating category. The task force weighted each rating category using the distribution of bonds outstanding at the end of 1996 to form a single annual series of bond default rates for use in this study. This data was then used to calculate annual survival rates, and these survival rates were then compared to the total return on the S&P 500 in excess of the short term Treasury rate. The correlation between the two time series of .2% is close to zero and is strong support for the Task Force recommendation that these two items should be treated as independent in the covariance formula. Appendix I contains additional evidence supporting this conclusion.

Mortgage Loans versus Unaffiliated Common Stock

The category of fixed income investments includes not only bonds but also mortgage loans. This category is much more important for life insurers than property/casualty insurers and, therefore, the task force also examined the correlation between the returns on common stock and mortgage loan delinquency data. The source for the mortgage loan data was the ACLI quarterly survey of delinquency data. This data is available for the period starting July 1965 and ending December 1996. The correlation between the excess returns on stock and (1-delinquency rate) is -8.2%, and thus it is clearly conservative to assume that unaffiliated common stock is independent of this category of fixed income investment.

Real Estate versus Bonds and Mortgage Loans

Although the original charge to the task force was limited to common stock, the task force noted during its deliberations that the R_2 component of the property/casualty formula includes not just unaffiliated common stock but also real estate and investments held on Schedule BA which are predominately real estate partnerships in the case of life insurers. Therefore the task force examined the correlation between real estate and the other categories of investment.

The task force decided to use the appraisal-based Frank Russell index as the best proxy for real estate performance. This index is available on a quarterly basis from the fourth quarter of 1978 to the fourth quarter of 1995. When compared to the mortgage loan data a 92% correlation was observed over the 73 quarters for which data is available. The real estate data also exhibited a strong correlation of 66% with the survival data for bonds, but since this correlation had to be calculated on an annual basis it is based on only 19 observations and is thus of limited credibility.

When the task force compared the real estate data to the performance of the S&P 500 it found a correlation of -7%.

Thus we found little support in the data for the covariance treatment accorded to real estate in the property/casualty formula. In the task force's judgment real estate and investments in the nature of real estate held on Schedule BA belong in the same component as fixed income investments and not in the same category as common stock.

Preferred Stock

Preferred stock is a relatively small part of most insurers portfolios, and the task force did not examine historical data for preferred stock. However, the task force feels that the high quality preferred stock held by life insurers is much more similar to other types of fixed income investment than it is to common stock. Such preferred stock tends to trade at a spread over Treasury securities and the incidence of defaults is not much higher than for bonds. Therefore, the task force recommends that preferred stock be placed in the same category as other fixed income investments.

Other Types of Common Stock

There have already been extensive discussions of the treatment of insurance company affiliates in the covariance formula and therefore the task force has chosen not to address this category of investment.

The remaining common stock is that of affiliates other than U.S. insurance company affiliates that file risk-based capital reports and alien insurers both of which are included in the C0 section of the formula. Included in this category are investment subsidiaries, holding companies in excess of the investment in subsidiary insurers, U.S. insurers not subject to the risk-based capital formula and "other" affiliates. Presumably, this category is predominately affiliated non-insurers, and in the task force's judgment the common stock of these affiliates is more like unaffiliated common stock than the types of investments included in the

fixed income and real estate category. Therefore the task force recommends that this residual category of common stock be included with unaffiliated common stock.

Impact of the Change in the Covariance Formula for Unaffiliated Common Stock

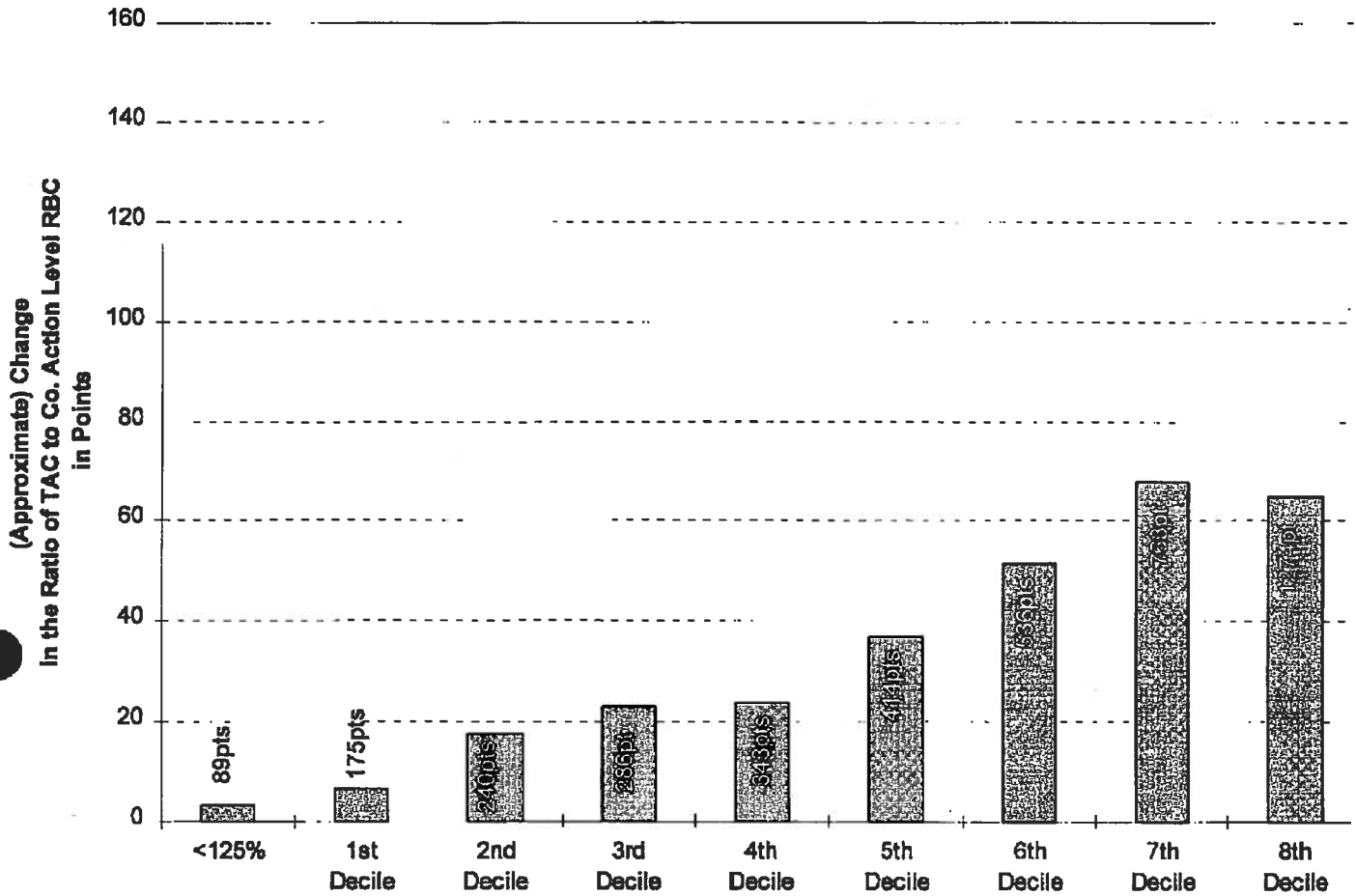
The task force does not have at its disposal the details of the risk-based capital calculation for individual insurers since this data is filed on a confidential basis with the NAIC. However, the AVR worksheets are publicly available and the task force has used these worksheets to develop an estimate of the effect of the proposed change in the covariance treatment of unaffiliated common stock. Unfortunately, the AVR worksheets do not allow a similar estimate to be prepared for the proposed change in the covariance treatment of affiliated non-insurers.

Because the AVR data does not contain any information on the C0, C2, C3 and C4 risks the task force assumed that all of the risk arises from C1 and C3. Individual companies on the task force have verified that this assumption does not produce a material distortion in the following estimates.

The first chart prepared by the task force shows the effect of the proposed change on the RBC ratio of insurers grouped by the level of their current RBC ratio. This format was chosen to highlight the effect of the proposal on weakly capitalized companies. As can be seen from the chart companies with an RBC ratio of less than 125 points will see an increase in their average ratio of only 3 points. Of these, only one insurer will see its ratio increase from below 125 points to above that level, and only four insurers will see a similar increase through 100 points. The more dramatic increases are confined to groups with average RBC ratios of 200 points or more.

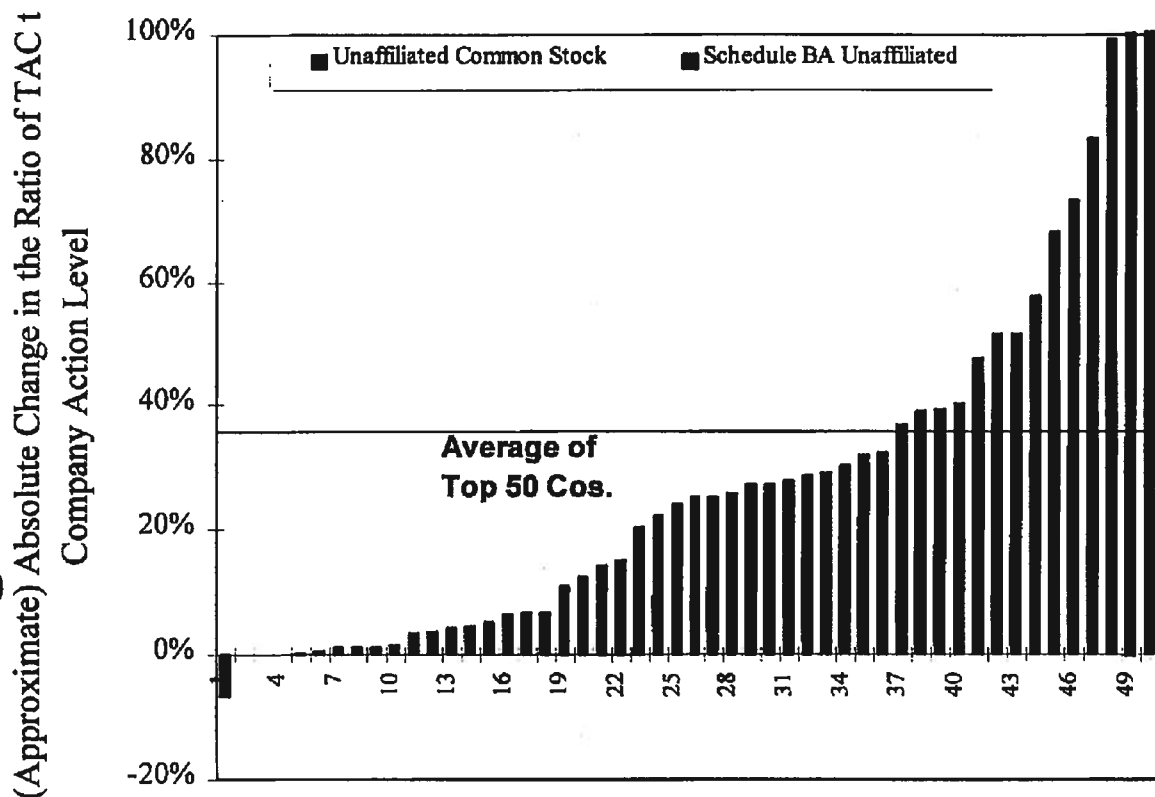
Note that each bar is labeled with the average actual RBC ratio at yearend 1996. For the companies in the top decile this ratio is an amazing 22974%. Such a ratio implies a company with high quality assets and few if any liabilities. The projected increase of 150 points for such companies will be hardly noticeable.

**Approx. Absolute Change in the Ratio of TAC to Co. Action Level RBC
By Changing Covariance Treatment of Unaffiliated Common Stock
All Companies Ordered by Initial RBC Ratio**



The next chart shows the impact on individual companies for the top 50 insurers ranked by assets.

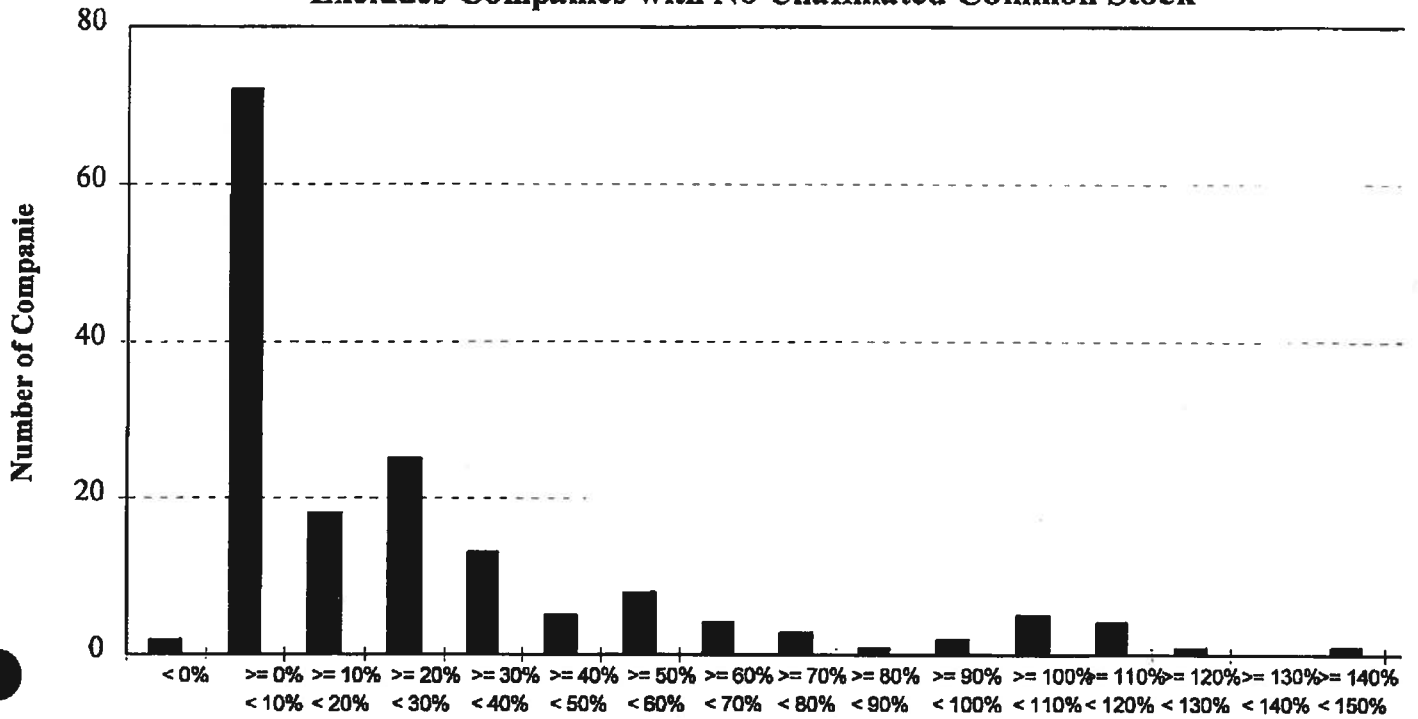
**Approx. Absolute Change in the Ratio of TAC to Company Action Level
By Changing Co-variance Treatment of Unaffiliated Common Stock
Top 50 Companies (By Assets)**



The average change in this group is an increase of 35 points in the risk-based capital ratio. The change varies significantly between companies with some companies experiencing very little change, while other companies will experience an increase of almost 100 points.

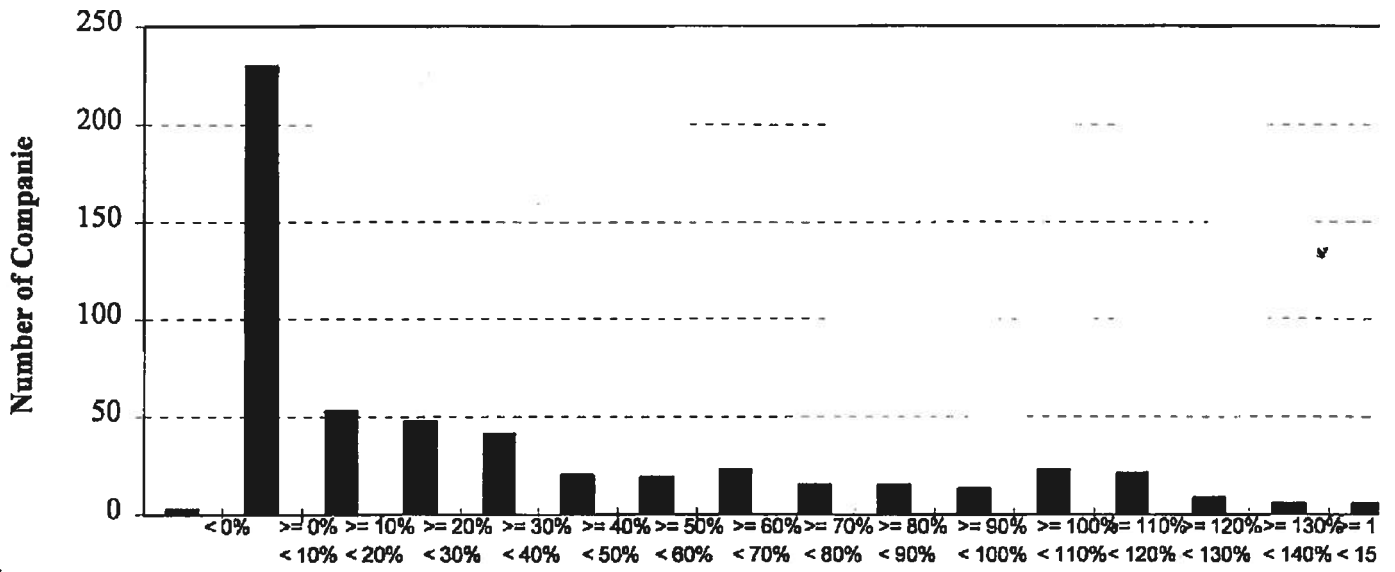
The next chart extends the universe of companies to the top 200 companies by assets and the following chart extends the analysis to the entire industry excluding only those insurers holding no unaffiliated common stock.

**Approx. Absolute Change in the Ratio of TAC to Company Action Level
By Changing Co-variance Treatment of Unaffiliated Common Stock
Top 200 Companies By Assets
Excludes Companies with No Unaffiliated Common Stock**



(Approximate) Absolute Change in the Ratio of TAC to Company Action Level

**Approx. Absolute Change In the Ratio of TAC to Company Action Level
By Changing Co-variance Treatment of Unaffiliated Common Stock
All Companies with Unaffiliated Common Stock Investments**



(Approximate) Absolute Change in the Ratio of TAC to Company Action Level

Impact on the Effective Factor for Common Stock

The change in the covariance treatment of common stock will decrease the effective marginal risk-based capital requirements arising from each incremental increase in an insurer's holdings of common stock.

The marginal factor for common stock can be readily determined and is given by the formula:

$$\text{marginal factor for common stock} = \frac{C1cs}{\sqrt{C1cs^2 + (C1o + C3)^2 + C2^2}} \times 30\%$$

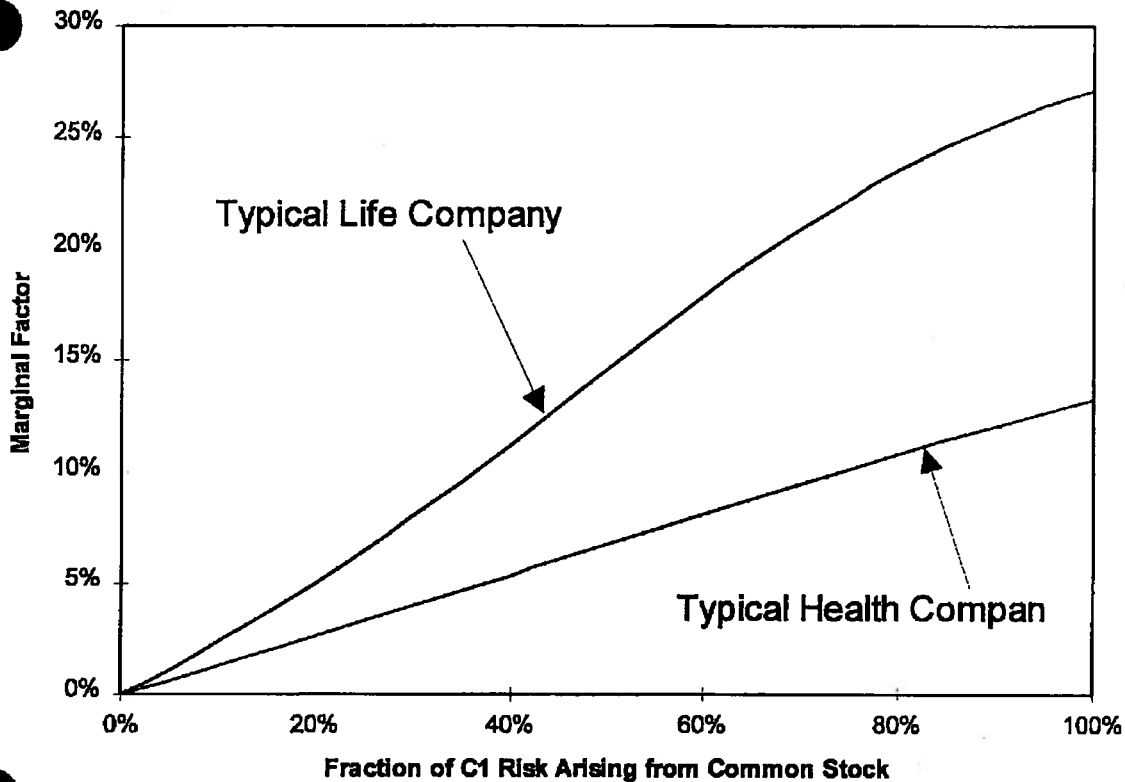
In all cases the marginal factor will be less than the nominal factor of 30%. Generally the benefit of the covariance adjustment will be most pronounced for companies with relatively small holdings of common stock. For instance, a typical large company might have a total C1 requirement equal to 3% of assets and a C3 requirement equal to 1% of assets. The marginal common stock factors under this recommendation would be as follows:

Marginal Common Stock Factors

% of Assets in Common Stock	Common Stock C1 Risk as % of Assets	Residual C1 Risk as % of Assets (=3%-C1cs)	Marginal Factor	
			Typical Life Company C2 = 1% of Assets	Typical Health Company C2 = 6% of Assets
1%	.3%	2.7%	2.3%	1.3%
5%	1.5%	1.5%	14.6%	6.7%
10%	3.0%	0.0%	27.1%	13.3%

The following chart displays these results graphically.

Marginal Common Stock Factor



Common Stock Factor

Background

Current Life Insurance Factor

The 30% risk-based capital factor used by life insurers for common stock was originally recommended by the Technical Resource Group advising the NAIC Life Risk-Based Capital Working Group. The technical resource group based its recommendation on the following underlying assumptions:

the purpose of risk-based capital is to make provision for losses that are reported under the statutory valuation system which values common stock at market,

the formula should make provision for the maximum cumulative capital loss over the assumed holding period,

a two year period is representative of the period that a life insurer might continue to hold common stock during a market decline, and

the loss is entirely unrealized and therefore no credit is given for any reduction in taxes.

The common stock factor was chosen so that 94% of the time it provided for enough capital to

absorb the worst cumulative capital loss over the following two year period. The capital requirements were tabulated for each twenty-four month period starting on or after October 1960 and ending on or before December 1991, a total of 350 periods. The table in Appendix II displays the results of that tabulation. The table shows that the 94th percentile of the distribution is 29.65% which was rounded to 30% in the final formula.

Current Property/Casualty Factor

Two studies were prepared in the original development of the property/casualty risk-based capital factor of common stock. Both studies based their estimates on a one year holding period, and looked at only the end points of each period to determine the capital requirements for the period.

In March of 1992 Robert Butsic presented a theoretical paper on RBC for unaffiliated common stock to the Actuarial Technical Resources Committee advising the NAIC. He used the "Expected Policyholder Deficit" which takes account of both the likelihood and magnitude of a capital deficiency rather than the ruin theory techniques used in the life formula which determine capital requirements based solely on the likelihood of default. He recommended a 10%-15% factor, with 10% corresponding to the 1946-1991 data and 15% corresponding to the 1926-1991 data.

In April 1992 the Accounting Advisory Committee presented a report to the NAIC Property/Casualty Risk-Based Capital Working Group. Based on data from the 1940-1990 period this group recommended a factor of 10% at the 90% confidence level and 13% at the 95% confidence interval.

The NAIC's choice of a 15% factor, although made in executive session, seems to have been based on these studies.

Discussion of the Recommendation of the Task Force

Although the task force agreed that the current 30% factor is conservative, we split over the level of conservatism. The disagreement centered on the premises underlying the original factor. Those arguing for a lower factor took issue with two of these premises: the assumption of a two year holding period, and the requirement that the insurer have enough capital to survive the worst intermediate monthly result during the holding period.

The original two year holding period was used as being typical of the holding period for common stock. Since risk-based capital reports are produced on an annual basis, any company finding itself with a capital deficiency at the end of the year would be under considerable pressure to reduce its risk profile and the easiest way of doing so is to dispose of its common stock. However, the proponents of a two year holding period pointed out that such a sale would lock in the company's losses and that therefore the company would try to avoid it.

The proponents of a change in the task force's philosophy regarding the use of intermediate results cited two reasons. First, if an insurer has enough assets that it can meet its cash flow

requirements over the life of its obligations then it is solvent on an economic basis even if it fails some solvency test at intermediate points. Second, even if one focuses on such intermediate results there is no need to do so any more frequently than the company files its risk-based capital report. The opponents of the change continue to believe that intermediate results are important, especially if the company is exposed to a disintermediation risk. Runs on an insurer tend to occur when the insurer's financial position is at its weakest.

Given the differences of opinion with our group, the task force decided to recommend no change be made in the current base factor. This recommendation is based on the factor's inherent conservatism and the recognition that the covariance recommendation has a larger effect on the ultimate risk-based capital requirement.

In view of the conservative nature of the factor the task force also decided that no beta adjustment is necessary. However, the task force recommends that introduction of a beta adjustment be reconsidered if the factor for common stock is ever reduced.

Next Steps

Ultimately, it may be desirable to subsume the current C1 stock factor by a C3 type calculation using the general approach currently under development by the C3 subcommittee of the Academy's Life Risk-Based Capital Task Force. This general approach involves projecting liabilities and the assets together in order to develop a factor that takes into account the volatility of long term value that a line of business could experience in various financial markets. To the extent that equities support company surplus and are not included in C3 a C1 factor may still be necessary.

The current pigeon hole factor approach will not adequately distinguish between good and bad stock volatility. For instance, as the industry sells increasing amounts of equity indexed annuity products and supports these liabilities with the appropriate stock exposure, the risk-based capital requirements may become very onerous even though the asset/liability match is prudent and desirable. A methodology that links the assets and liabilities will more appropriately identify those circumstances when stock investments expose the company to risk of ruin due to true loss of value.

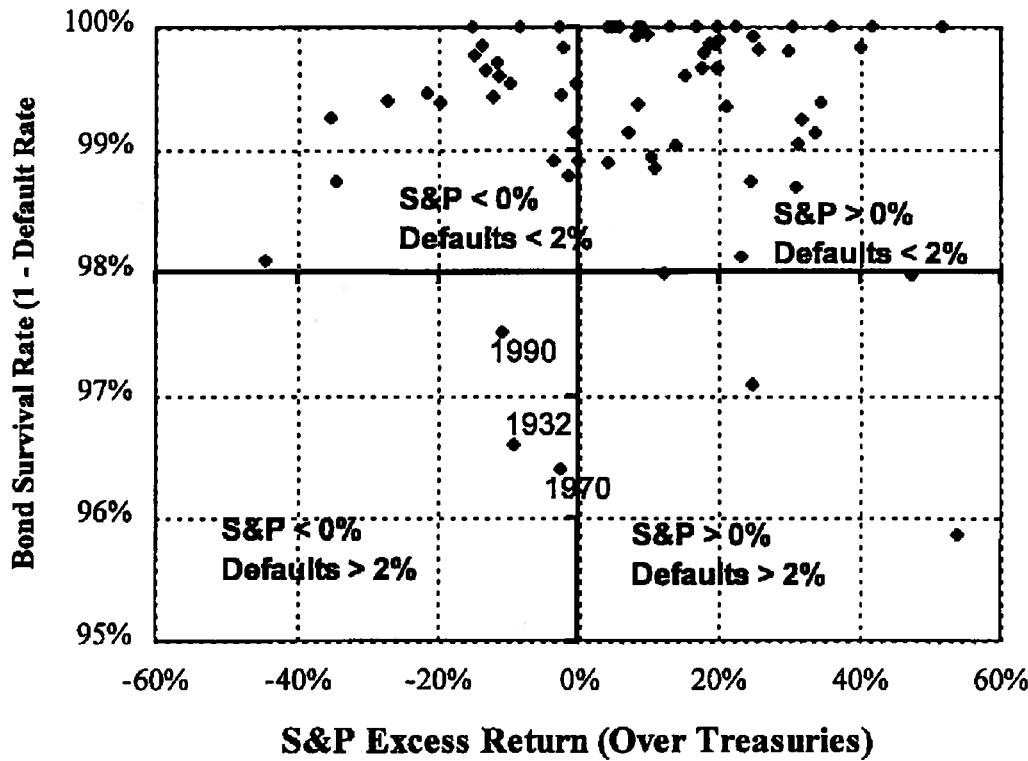
Such a comprehensive solution may require changes in the accounting for common stock in addition to changes in the risk-based capital calculation. In many cases the market volatility of common stock overstates the insurer's exposure to risk and in these cases it may be necessary to adjust for this volatility to develop a consistent overall framework.

Appendix I - Graphical Display of Stock Returns Vs Bond Defaults

One Year Holding Period

The following chart displays the results of a comparison of the excess return on common stock versus the bond survival rate for the same annual period.

**S&P Excess Return (Over Treasuries) Vs. Bond Survival Rates
Annual Rates 1926 - 1996**



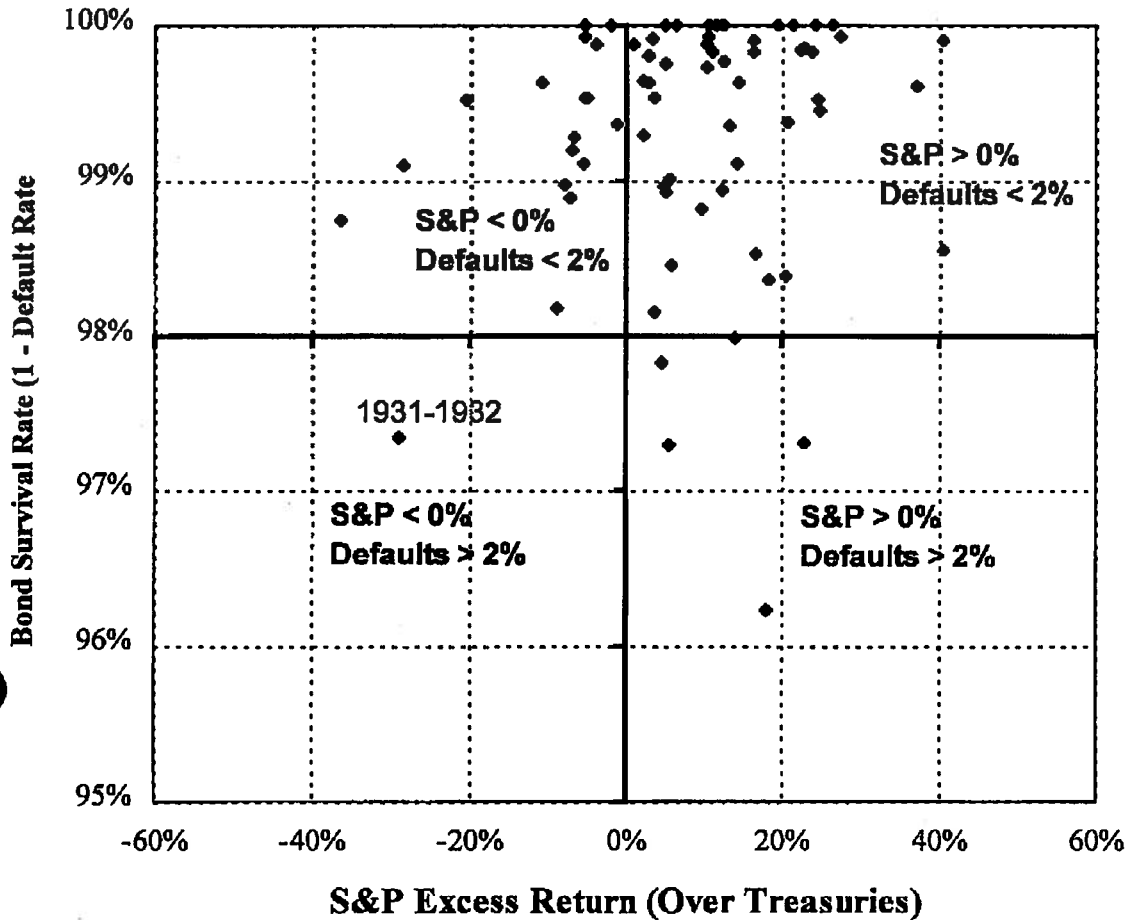
The points in the lower left hand quadrant are of the most concern since they represent those years in which defaults are at high levels and the stock market lost value. Using an annual horizon as displayed in the above graph shows that only three years fell into this quadrant, 1932, 1970 and 1990.

Two Year Holding Period

However, some members of the task force were concerned that the stock market might be a leading indicator of bond defaults and thus the performance over multi-year holding periods might be worse than indicated by the one-year results given above. To address this concern the task force prepared the following charts.

S&P Excess Return (Over Treasuries) Vs. Bond Survival Rates

Annualized Rates Over 2-Year Periods: 1926 - 1996



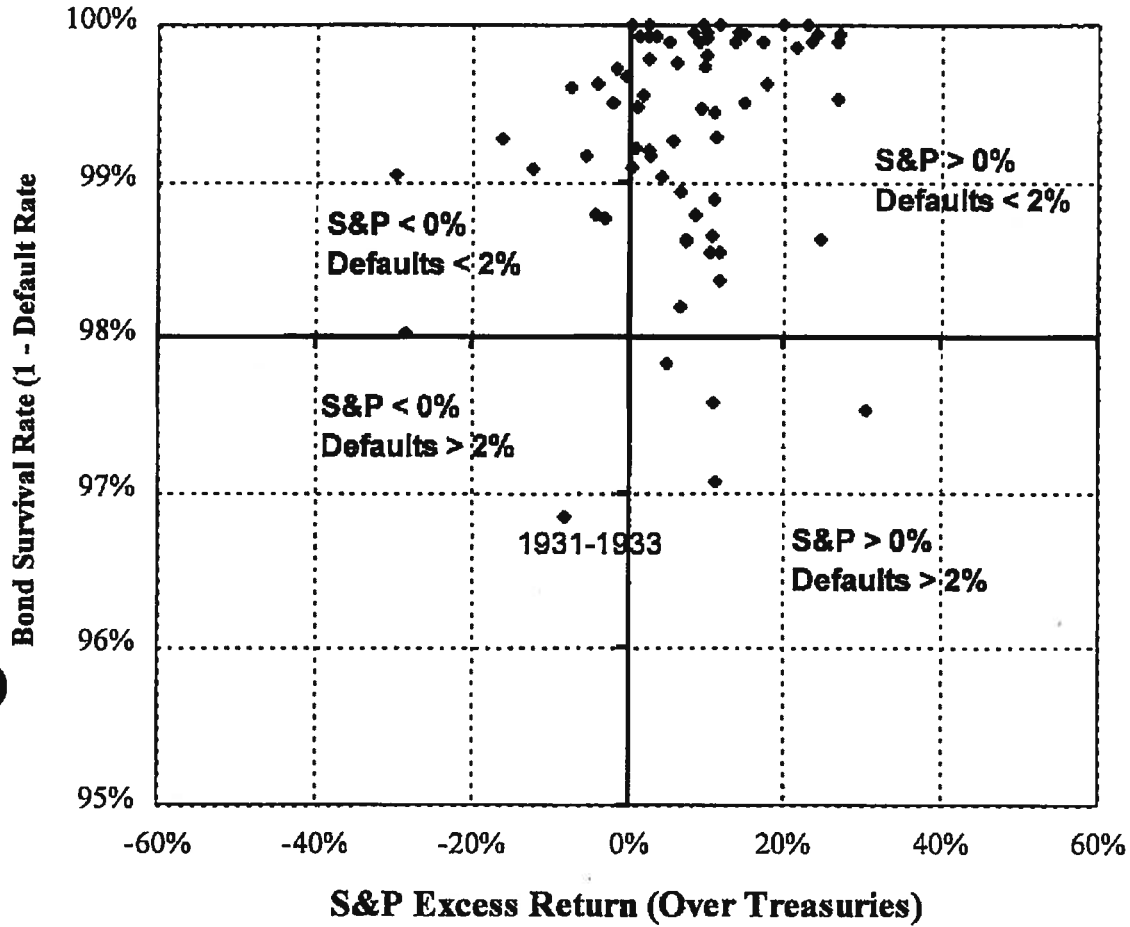
The returns displayed above are the annualized returns over a two year holding period. Once again the points in the lower left hand quadrant are the ones of most concern.

Three Year Holding Period

The chart extends the previous analysis to three year holding periods and once again only the depression era period 1931-1933 falls into the lower left hand quadrant.

S&P Excess Return (Over Treasuries) Vs. Bond Survival Rates

Annualized Rates Over 3-Year Periods: 1926 - 1996



Appendix II - S&P 500 Returns Underlying the Life Factor

DISTRIBUTION OF MINIMUM PRESENT VALUES OF GAINS OVER 24 FUTURE MONTHLY DATES
S&P 500 DATA - OCTOBER 1960 TO DECEMBER 1991

	P-TILE	P-TILE	P-TILE	P-TILE	P-TILE	P-TILE	P-TILE	P-TILE	P-TILE	P-TILE			
0	0.1250	15.1	0.0251	30.0	-0.0085	44.9	-0.0415	59.7	-0.0794	74.6	-0.1302	89.4	-0.2
0.9	0.1196	15.4	0.0247	30.3	-0.0085	45.1	-0.0421	60.0	-0.0797	74.9	-0.1320	89.7	-0.2
1.1	0.1136	15.7	0.0244	30.6	-0.0086	45.4	-0.0424	60.3	-0.0802	75.1	-0.1321	90.0	-0.2
1.4	0.1033	16.0	0.0240	30.9	-0.0086	45.7	-0.0428	60.6	-0.0802	75.4	-0.1331	90.3	-0.2
1.7	0.0999	16.3	0.0238	31.1	-0.0091	46.0	-0.0430	60.9	-0.0811	75.7	-0.1373	90.6	-0.2
2.0	0.0886	16.6	0.0237	31.4	-0.0099	46.3	-0.0432	61.1	-0.0816	76.0	-0.1377	90.9	-0.2
2.3	0.0799	16.9	0.0230	31.7	-0.0103	46.6	-0.0432	61.4	-0.0822	76.3	-0.1389	91.1	-0.2
2.6	0.0769	17.1	0.0230	32.0	-0.0117	46.9	-0.0440	61.7	-0.0822	76.6	-0.1418	91.4	-0.2
2.9	0.0754	17.4	0.0224	32.3	-0.0124	47.1	-0.0445	62.0	-0.0823	76.9	-0.1420	91.7	-0.2
3.1	0.0742	17.7	0.0201	32.6	-0.0128	47.4	-0.0449	62.3	-0.0833	77.1	-0.1433	92.0	-0.2
3.4	0.0736	18.0	0.0191	32.9	-0.0145	47.7	-0.0453	62.6	-0.0838	77.4	-0.1435	92.3	-0.2
3.7	0.0719	18.3	0.0190	33.1	-0.0150	48.0	-0.0454	62.9	-0.0841	77.7	-0.1474	92.6	-0.2
4.0	0.0678	18.6	0.0190	33.4	-0.0155	48.3	-0.0462	63.1	-0.0855	78.0	-0.1490	92.9	-0.2
4.3	0.0671	18.9	0.0188	33.7	-0.0158	48.6	-0.0470	63.4	-0.0859	78.3	-0.1491	93.1	-0.2
4.6	0.0647	19.1	0.0184	34.0	-0.0162	48.9	-0.0471	63.7	-0.0860	78.6	-0.1491	93.4	-0.2
4.9	0.0638	19.4	0.0173	34.3	-0.0171	49.1	-0.0472	64.0	-0.0860	78.9	-0.1496	93.7	-0.2
5.1	0.0632	19.7	0.0166	34.6	-0.0175	49.4	-0.0472	64.3	-0.0860	79.1	-0.1497	94.0	-0.2
5.4	0.0592	20.0	0.0164	34.9	-0.0184	49.7	-0.0481	64.6	-0.0872	79.4	-0.1550	94.3	-0.2
5.7	0.0511	20.3	0.0136	35.1	-0.0188	50.0	-0.0497	64.9	-0.0876	79.7	-0.1550	94.6	-0.2
6.0	0.0508	20.6	0.0135	35.4	-0.0192	50.3	-0.0498	65.1	-0.0900	80.0	-0.1553	94.9	-0.3
6.3	0.0497	20.9	0.0127	35.7	-0.0211	50.6	-0.0511	65.4	-0.0900	80.3	-0.1587	95.1	-0.3
6.6	0.0493	21.1	0.0124	36.0	-0.0214	50.9	-0.0530	65.7	-0.0901	80.6	-0.1608	95.4	-0.3
6.9	0.0479	21.4	0.0120	36.3	-0.0220	51.1	-0.0535	66.0	-0.0904	80.9	-0.1608	95.7	-0.3
7.1	0.0477	21.7	0.0107	36.6	-0.0221	51.4	-0.0554	66.3	-0.0917	81.1	-0.1640	96.0	-0.3
7.4	0.0475	22.0	0.0101	36.9	-0.0224	51.7	-0.0555	66.6	-0.0944	81.4	-0.1710	96.3	-0.3
7.7	0.0455	22.3	0.0099	37.1	-0.0237	52.0	-0.0572	66.9	-0.0963	81.7	-0.1744	96.6	-0.3
8.0	0.0450	22.6	0.0082	37.4	-0.0248	52.3	-0.0581	67.1	-0.0971	82.0	-0.1745	96.9	-0.3
	0.0445	22.9	0.0081	37.7	-0.0254	52.6	-0.0582	67.4	-0.0974	82.3	-0.1759	97.1	-0.3
	0.0427	23.1	0.0075	38.0	-0.0255	52.9	-0.0603	67.7	-0.0985	82.6	-0.1777	97.4	-0.3
	0.0424	23.4	0.0066	38.3	-0.0260	53.1	-0.0618	68.0	-0.0991	82.9	-0.1786	97.7	-0.3
8.3	0.0424	23.7	0.0059	38.6	-0.0276	53.4	-0.0634	68.3	-0.1017	83.1	-0.1812	98.0	-0.3
9.1	0.0417	24.0	0.0058	38.9	-0.0279	53.7	-0.0641	68.6	-0.1028	83.4	-0.1861	98.3	-0.3
9.4	0.0415	24.3	0.0058	39.1	-0.0280	54.0	-0.0645	68.9	-0.1029	83.7	-0.1883	98.6	-0.4
9.7	0.0414	24.6	0.0053	39.4	-0.0303	54.3	-0.0649	69.1	-0.1033	84.0	-0.1898	98.9	-0.4
10.0	0.0412	24.9	0.0051	39.7	-0.0308	54.6	-0.0659	69.4	-0.1034	84.3	-0.1933	99.1	-0.4
10.3	0.0403	25.1	0.0046	40.0	-0.0309	54.9	-0.0660	69.7	-0.1041	84.6	-0.1957	99.4	-0.4
10.6	0.0373	25.4	0.0023	40.3	-0.0315	55.1	-0.0668	70.0	-0.1065	84.9	-0.1961	99.7	-0.4
10.9	0.0368	25.7	0.0010	40.6	-0.0316	55.4	-0.0691	70.3	-0.1067	85.1	-0.1970	100.0	-0.4
11.1	0.0363	26.0	0.0009	40.9	-0.0317	55.7	-0.0694	70.6	-0.1073	85.4	-0.1972		
11.4	0.0353	26.3	-0.0007	41.1	-0.0317	56.0	-0.0695	70.9	-0.1075	85.7	-0.2008		
11.7	0.0350	26.6	-0.0014	41.4	-0.0322	56.3	-0.0696	71.1	-0.1076	86.0	-0.2066		
12.0	0.0333	26.9	-0.0014	41.7	-0.0335	56.6	-0.0708	71.4	-0.1082	86.3	-0.2097		
12.3	0.0329	27.1	-0.0015	42.0	-0.0338	56.9	-0.0709	71.7	-0.1084	86.6	-0.2102		
12.6	0.0312	27.4	-0.0016	42.3	-0.0338	57.1	-0.0712	72.0	-0.1108	86.9	-0.2166		
12.9	0.0290	27.7	-0.0028	42.6	-0.0343	57.4	-0.0717	72.3	-0.1113	87.1	-0.2186		
13.1	0.0289	28.0	-0.0050	42.9	-0.0371	57.7	-0.0722	72.6	-0.1115	87.4	-0.2204		
13.4	0.0285	28.3	-0.0062	43.1	-0.0379	58.0	-0.0723	72.9	-0.1159	87.7	-0.2207		
13.7	0.0275	28.6	-0.0070	43.4	-0.0382	58.3	-0.0731	73.1	-0.1168	88.0	-0.2220		
14.0	0.0289	28.9	-0.0077	43.7	-0.0386	58.6	-0.0745	73.4	-0.1217	88.3	-0.2245		
14.3	0.0281	29.1	-0.0081	44.0	-0.0401	58.9	-0.0759	73.7	-0.1241	88.6	-0.2269		
14.6	0.0255	29.4	-0.0083	44.3	-0.0405	59.1	-0.0769	74.0	-0.1257	88.9	-0.2294		
14.9	0.0254	29.7	-0.0084	44.6	-0.0405	59.4	-0.0774	74.3	-0.1258	89.1	-0.2304		

**PROPOSED RBC INSTRUCTION CHANGES
TO REFLECT NEW EXPERIENCE FACTORS:**

● **PREFERRED STOCK**

● **SURPLUS NOTES**

● **CAPITAL NOTES**

**James F. Reiskytl
November 26, 1997**

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ASSET CONCENTRATION FACTOR

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Issuer Name #1	Asset Type	Statement Value	Factor	Additional RBC	Adjustment / Subsidiary RBC	RBC Requirement
(1.1)	Bond Asset Class 2		X 0.0100			
(1.02)	Bond Asset Class 3		X 0.0400			
(1.03)	Bond Asset Class 4		X 0.0500			
(1.04)	Bond Asset Class 5		X 0.1000			
(1.05)	Bond Asset Class 1		X 0.0030			
(1.06)	Unaffiliated Preferred Stock Class 1		X 0.0030			
(1.07)	Unaffiliated Preferred Stock Class 2		X 0.0030	-0.23		
(1.08)	Unaffiliated Preferred Stock Class 3		X 0.0600			
(1.09)	Unaffiliated Preferred Stock Class 4		X 0.1100	-1.35		
(1.10)	Unaffiliated Preferred Stock Class 5		X 0.0000	-0.5		
(1.11)	Collateral Loans		X 0.0500			
(1.12)	Receivable for Securities		X 0.0500			
(1.13)	Write-Ins for Invested Assets		X 0.0500			
(1.14)	Premium Notes		X 0.0500			
(1.15)	Real Estate - Forward		X †			
(1.16)	Real Estate - Forward Encumbrances		X †			
(1.17)	Real Estate - Investments		X †			
(1.18)	Real Estate - Investment Encumbrances		X †			
(1.19)	Real Estate - Schedule BA		X †			
(1.20)	Real Estate - Schedule BA Encumbrances		X †			
(1.21)	Farm Mortgages in Good Standing		X †			
(1.22)	Commercial Mortgages in Good Standing w/ Restructured Terms		X †			
(1.23)	Farm Mortgages - 90 Days Overdue		X †			
(1.24)	Farm Mortgages - 90 Days Overdue - Cumulative Withdrawals		X †			
(1.25)	Residential mortgages - 90 Days Overdue		X †			
(1.26)	Residential mortgages - 90 Days Overdue - Cumulative Withdrawals		X †			
(1.27)	Commercial Mortgages - 90 Days Overdue		X †			
(1.28)	Commercial Mortgages - 90 Days Overdue - Cumulative Withdrawals		X †			

† Class 1 bonds name should not be included in the top 10 issuers. See instructions.
 ‡ Refer to the instructions for the Asset Concentration Factor for details of this calculation.

† Denotes items that must be manually entered on the filing schedule.

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OTHER LONG-TERM ASSETS (CONTINUED)

	(1) Statement Value	(2) Unrealized Gain/Loss	(3) RBC Submittal†	(4) RBC Requirement
Rated Capital Notes				
(23) Rated Class 1 Capital Notes	Schedule BA Part 1 Column 7 Line 1299999, in part		X 0.000 =	.009
(24) Rated Class 2 Capital Notes	Schedule BA Part 1 Column 7 Line 1299999, in part		X 0.000 =	.025
(25) Rated Class 3 Capital Notes	Schedule BA Part 1 Column 7 Line 1299999, in part		X 0.040 =	
(26) Rated Class 4 Capital Notes	Schedule BA Part 1 Column 7 Line 1299999, in part		X 0.000 =	.135
(27) Rated Class 5 Capital Notes	Schedule BA Part 1 Column 7 Line 1299999, in part		X 0.250 =	.250
(28) Rated Class 6 Capital Notes	Schedule BA Part 1 Column 7 Line 1299999, in part		X 0.300 =	
(29) Total Rated Capital Notes	Sum of Lines (23) through (28)			
(30) Schedule BA - All Other				
Schedule BA Common Stock	AVR Equity Component Column 1 Line 60		X 0.300 =	
(31a) Other Schedule BA Assets	AVR Equity Component Column 1 Line 65			
(31b) Less Class 2 thru 6 Rated Surplus Notes and Capital Notes	Column (1) Lines (17) through (21) + Column (1) Lines (24) through (28)			
(31c) Net Other Schedule BA Assets	Line (11a) less (31b)		X 0.300 =	
(32) Schedule BA Assets Excluding Mortgages and Real Estate	Lines (8) + (15) + (22) + (29) + (30) + (31c)			

† Fixed income instruments and surplus notes rated by the NAIC Securities Valuation Office (SVO) or a nationally recognized statistical rating organization should be reported in Column 3.
‡ Column (2) equals Column (3) - Column (1) for Lines (31c).

Denotes items that must be manually entered on the filing diskette.

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UNAFFILIATED PREFERRED AND COMMON STOCK

	(1)	(2)	(3)	(4)
	Substantial Value	Less Affiliated Preferred Stock Withheld AVB	RBC Subtotal	Rate*
(1) Unaffiliated Preferred Stock				
Asset Class 1	Asset Valuation Reserve (AVR) Deficit Component (Page 69) Column 1 Line 10			
(2) Asset Class 2	AVR Deficit Component Column 1 Line 11			
(3) Asset Class 3	AVR Deficit Component Column 1 Line 12			
(4) Asset Class 4	AVR Deficit Component Column 1 Line 13			
(5) Asset Class 5	AVR Deficit Component Column 1 Line 14			
(6) Asset Class 6	AVR Deficit Component Column 1 Line 15			
(7) Total Unaffiliated Preferred Stock	Sum of Lines (1) through (6)			
(8) Total Unaffiliated Common Stock	(Column 1) should equal Page 2 Column 4 Line 2,1 less Asset Valuation Reserve Deficit Component Column 1 Line 16.			
(9) Less Affiliated Common Stock	Column (7) should equal Schedule D Summary Column 3 Line 39 less Asset Valuation Reserve Deficit Component Column 1 Line 16.			
(10) Less Money Market Funds	Schedule D Summary Column 3 Line 54			
(11) Less Federal Home Loan Bank Common Stock	Schedule D Summary Column 3 Line 33			
(12) Net Other Unaffiliated Common Stock	Included in Schedule D Part 2 Section 7			
(13) Total Unaffiliated Common Stock	Included in Schedule D Part 2 Section 2			
(14) Total Unaffiliated Preferred and Common Stock	Lines (8) - (9) - (10) - (11)			
(15) Total Unaffiliated Preferred and Common Stock	Lines (10) + (11) + (12)			
(16) Total Unaffiliated Preferred and Common Stock	(Column 1 should equal Page 2 Column 4 Line 2,1 less Schedule D Summary by Category Column 3 Line 33)			
(17) Total Unaffiliated Preferred and Common Stock	Line (7) + Line (13)			

* Rate is common stock that must be annually covered on the filing date.

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UNAFFILIATED PREFERRED AND COMMON STOCK

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Notes of Factors

Unaffiliated Preferred Stock

Experience data to develop preferred stock factors is not readily available. It is believed that preferred stocks are essentially more likely to default than bonds with the same risk - default would be considered higher than that experienced on bonds. Formula factors are equal to bond factors plus 2 percent but not more than 90 percent. This is consistent with the approach adopted for preferred stock factors for AFR purposes.

Unaffiliated Preferred Stock

The preferred stock factors were changed in 1997 to reflect a recent study by Moody's of preferred stock cumulative dividend impairment rates (1980-94) and cumulative default rates on corporate bonds (1970-95). The risk for preferred stock is based on risk of default as well as the risk of passed dividends. The class 5 factor is based on judgment since data is not available.

Lines (1) through (6)

Column (1) amounts are from the Asset Valuation Reserve Default Component, Page 31, Column 1, Lines 10 through 15 of the Annual Statement. Since affiliated amounts are included for affiliated companies without an AVE in the Asset Valuation Reserve Default Component, Lines 10 through 15, these affiliated amounts should be deducted in Column (2). Affiliated companies with an AVE are reported on the Asset Valuation Reserve Default Component, Line 16 and should not be included in Column (2).

Line (7)

Column (1) should equal Annual Statement Assets, Page 2, Column 4, Line 21 less Asset Valuation Reserve Default Component Column 1 Line 16. Column (2) should equal Schedule D Summary by Country, Column 3, Line 39 less Asset Valuation Reserve Default Component, Column 1, Line 16.

Line (10)

Amounts should reflect only those money market mutual funds reported on Schedule D, Part 2, Section 2. Money market funds qualifying for Schedule DA treatment or reported on Schedule D, Part 1 should not be included on this line. Refer to the NAIC's *Purposes and Procedures of the Securities Valuation Office* for a discussion on those money market funds that qualify for Schedule DA treatment.

Line (11)

Federal Home Loan Bank common stock reported on Schedule D, Part 2, Section 2 of the Annual Statement should be reflected on this line.

Line (12)

Column (1) should equal Annual Statement Schedule D Summary by Country, Column 3, Line 54 less Schedule D Summary by Country, Column 3, Line 53 less Line (10) money market funds less Line (11) Federal Home Loan Bank stock.