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Measuring Risk-Based Capital

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Abstract

In order to assure policyholders that their benefits will be available when they are needed, the National Association of Insurance Commissioners (NAIC) has begun regulating insurer capital through the Risk-Based Capital (RBC) Model Act for life insurance companies. The Model Act helps state insurance regulators plan to preserve and protect adequate insurance capital levels and maintain insurer solvency. The RBC requirements provide for a ratio which assesses the level of risk that is associated with an insurance company's assets. The purpose of the NAIC's RBC calculation is to develop the minimum amount of surplus needed given the risks assumed by the company. For example, the RBC model establishes a 30% risk factor for all unaffiliated common stock held by life insurance companies. This factor was established by using the S&P 500 as an indicator of the volatility of the stock market. However, questions arise regarding whether the S&P 500 is an accurate measure of the market risk associated with life insurer stock portfolios or whether another index would better reflect their risk. Therefore, after determining the market risk reflected by several different stock indexes and analyzing a sample of insurer stock portfolios, a discussion results about whether the RBC factor needs to be changed.

Introduction

Life insurance companies in the United States perform a dual function. Their primary role is to provide a method for American families to obtain security against unpredictable contingencies and to provide for their old age. However, they are also a highly important channel through which American people save money. Dr. S. S. Huebner suggests, "In a modern society, a sense of family responsibility mean[s] that life and health insurance [will] grow in importance. Individuals' responsibilities to themselves and their families include both the years of survival (and, hence, include savings accumulation) and the years after death."[1]

Since the life insurance industry is an important financial institution to the American people, the government has created many laws to regulate insurance companies. The governmental regulation of the insurance industry has often favored the rights of the consumer over those of the insurer. "The regulation of life insurance companies largely involves.....safeguarding policyholders' interests and maintaining public confidence in the safety and soundness of the life insurance system."[2] When policyholders pay money for life insurance policies, they rely in the utmost good faith on insurance companies to fulfill their contractual obligations.

Traditionally, in order to assure policyholders that their benefits would be available when needed, state governments required each insurer to maintain a minimum amount of capital, as specified by statute. The amount of capital was dependent on the lines of insurance to be transacted, but did not otherwise reflect the riskiness of the insurer's business. The risks to which insurers are subjected vary widely in both their insurance operations and their investment

operations. For example, an insurer that writes health insurance is subject to much more business risk than one that writes life insurance due to the unpredictability of health insurance claims. An insurer that invests a large part of its assets in common stocks is subject to much greater asset value risks than one that invests only in U.S. government bonds. Historically, the minimum capital statutes did not reflect these differences.

To rectify this regulatory weakness, the National Association of Insurance Commissioners (NAIC) began regulating life insurer capital through the Risk-Based Capital (RBC) Model Act for life insurance companies. By establishing target surplus amounts that are required above the insurer's reserve amounts, the Model Act helps state insurance regulators preserve and protect adequate insurance capital levels and maintain insurer solvency. The RBC requirements provide for a ratio which the NAIC compares to a series of trigger points to determine when an insurer should be placed under regulatory supervision. The purpose of the NAIC's RBC calculation is to develop the minimum amount of surplus needed, given the risks assumed by the company. Although the calculations for the RBC ratio are objective and mechanical, the measurement of the risks that are represented by the ratio is subjective and difficult to quantify. The difficulty in assessing these risks poses a regulatory problem if the risks quantified in the RBC formula do not accurately reflect an insurer's true risks. It then follows that the regulations may need to be changed in order to protect policyholders from life insurer insolvency. This paper will analyze the risk factor for the unaffiliated common stock classification, determine whether it accurately reflects the risk of a decline in value, and decide whether a more accurate method should be developed.

The Risk-Based Capital Model Act

In response to increasing concerns about the financial condition of the life insurance industry, the NAIC adopted the Risk-Based Capital Model Act. This model outlines several steps to strengthen state regulation of the insurance industry and to develop industry-wide risk-based capital requirements. This regulatory measure requires life insurers to report annually to regulators the riskiness of their invested assets and lines of business. The higher the risk, the more capital the insurer must have to support the risks. Terence Lennon, assistant deputy superintendent and chief examiner of the Life Insurance and Companies Bureau of the New York Insurance Department states, "Requiring insurers to individually evaluate the risk-based capital allows them to identify potential problems themselves and still gives regulators options if they see problems."[3] As a result, insolvencies are minimized, and when they do occur, regulators are able to take action earlier so that liabilities can be paid out of the insurer's assets rather than out of the state's guaranty fund. Under the risk-based capital regulation, new minimum capital requirements are calculated to reflect the riskiness of a company's activities. To do this, the Model Act requires that each company calculate its total adjusted capital, or, in general, the amount by which a company's assets exceed its liabilities. In addition, the company is required to calculate an RBC figure which reflects the riskiness of the company's activities. The company's total adjusted capital can then be compared to the RBC figure in the form of a ratio.

More specifically, the Model Act defines a company's total adjusted capital as the sum of four items: "(1) capital and surplus, (2) the asset valuation reserve, (3) voluntary investment reserves, and (4) half the liability for dividends to be paid to policyowners."[4] In addition, the

Model Act proposes that the RBC figure classify all investment and insurance risks into four categories: asset default risk, insurance pricing risk, asset/liability matching risk, and business risk. Asset default risk represents the risk that the value of assets may decline. In the calculation of asset risk, factors are assigned to all invested asset classifications. "For example, when examining asset risk, the common stock in an insurer's portfolio would be assigned a 30% factor. Thus, an insurer with $100 million in common stock would need $30 million in capital to support that investment. The riskier the asset, the more capital needed to support it."[5] There are factors for preferred and common stock, bonds, mortgages, separate accounts, real estate, and other long-term assets. Insurance risk represents the possibility of mispricing the insurance products because of adverse mortality and morbidity experience. In calculating insurance risk, different factors are assigned to the various lines of insurance. Due to the greater risk in health insurance than in life insurance, the factors for the health insurance lines are generally greater than the factors for life insurance lines. Asset/liability matching risk reflects the risk of losses due to policyholder withdrawls because of fluctuating interest rate levels. Business risk represents normal business and management risks.

The RBC figures for each of the four categories of risk are combined in a formula that incorporates a covariance adjustment since it is unlikely that all four risks will occur at the same time. "In order to adjust for the risk exposure that would otherwise be overstated by aggregating all components, the committee's proposal applies a covariance adjustment to account for the exclusive conditions which exist among risk classifications."[6] The formula is:

$$\text{Authorized Control Level} = \frac{C_4 + \sqrt{((C_1 + C_3)^2 + (C_2)^2)}}{2}$$

where:

C_1 = Asset Risk
C_2 = Insurance Pricing Risk
C_3 = Asset/Liability Matching Risk
C_4 = Business Risk

The authorized control level calculated from this formula indicates the minimum amount of capital that a company needs in order to cover its liabilities. For purposes of this paper, I will focus on the C_1 Asset Risk.

The Model Act requires that every company file an RBC Report with the commissioner, showing the calculations for the company's total adjusted capital and RBC figure. Frequently, the comparison between a company's total adjusted capital and RBC figure is expressed as a ratio. The numerator is the company's total adjusted capital and the denominator is the amount of capital required by the Model Act. The quotient is expressed as a percentage. However, the instructions that accompany the Model Act provide a formula for calculating one RBC figure, from which several additional RBC figures are derived, frequently causing confusion.

The RBC ratio indicates at what point an insurer may be placed under regulatory supervision. According to the Model Act, the four trigger points of regulatory control are: the Company Action Level, the Regulatory Action Level, the Authorized Control Level, and the Mandatory Control Level. Based on the ratio between a company's total adjusted capital and the authorized control level, the trigger points are:

RBC Level	Trigger Point (as a % of ACL)
Company Action Level	150 to 200
Regulatory Action Level	100 to 150
Authorized Control Level	70 to 100
Mandatory Control Level	Below 70

However, when the levels are based on the ratio between a company's total adjusted capital and the company action level (the authorized control level multiplied by two), the trigger points are:

RBC Level	Trigger Point (as a % of CAL)
Company Action Level	75 to 100
Regulatory Action Level	50 to 75
Authorized Control Level	35 to 50
Mandatory Control Level	Below 35

According to the Model Act, regardless of which ratio is calculated, no further action is required if a company's total adjusted capital equals or exceeds the Company Action Level. However, if the insurer reports a ratio within the Company Action Level, then the insurer must file a plan with the regulators, indicating corrective measures that can be taken to improve the company's financial condition. The second level of action is the Regulatory Action Level. An insurer that has a ratio within the Regulatory Action Level could be issued a regulatory order mandating actions to improve its financial condition. If an insurer reports a ratio within the third level of action, the Authorized Control Level, the insurance commissioner is authorized to take whatever action he deems necessary, including placing the insurer in rehabilitation or liquidation. The fourth, and most serious level, is the Mandatory Control Level in which the commissioner must seize control of the company if it reports a ratio within this level.

C-1 Asset Risk

"The C_1 or asset risk component covers the risk of asset default, the risk that amounts owed due to reinsurance will not be paid, and the risk that off-balance sheet contingencies and guarantees will be a call on the insurer's capital."[7] For example, the issuer of a bond may become insolvent and unable to pay all of the interest or principle of the bond, or the stock market may decline, resulting in lower statement values for common stocks. In order to accurately reflect this risk, the C_1 risk has been divided into eight different asset categories: bonds, mortgages, stocks, separate accounts, real estate, miscellaneous assets, reinsurance, and off balance sheet items. These categories are then subdivided according to the different asset classifications. Each classification is then assigned a different risk factor, depending on the asset's risk of decline in value. Therefore, riskier assets have higher factors because a greater percentage of the capital invested in the asset is at risk for loss.

For example, consider the stock asset category. It is subdivided into four classifications: affiliated stock (both preferred and common), unaffiliated preferred stock, and unaffiliated common stock. The RBC formula differentiates between affiliated and unaffiliated stock because a higher risk factor is needed for investments in affiliates based on the assumption that the parent life insurer would furnish to the affiliate only such capital as necessary for the affiliated operations. Consequently, the capital of the affiliate would not be available to meet the parent's life insurance obligations. The classification of unaffiliated common stock is divided into two groups: (1) non-government money market funds and (2) other common stocks. Earlier versions of the formula included federal government money market funds under common

stocks, with a risk factor of zero. Since the federal government money market funds invest only in short-term federal government securities, these shares are deemed to be risk free and do not incur an RBC penalty. Non-government money market funds are assumed to be the equivalent of cash and are assigned a risk factor of .003, the same factor that is assigned to cash. The factor for all other unaffiliated common stocks is .30 of the financial statement value.[8] This means that an insurer is required to have capital equalling 30% of the value of its common stock portfolio in order to sustain a decline in the value of the portfolio.

The Unaffiliated Common Stock Factor

The NAIC based the unaffiliated common stock factor upon historical changes in the Standard & Poors 500 (S&P 500) index from the 1960's to the 1990's. To determine the 30% factor, the NAIC actuaries analyzed the cumulative percent change in the S&P 500 index over a month by month, rolling two year period.[9] Since the figures that demonstrate how the NAIC arrived at the 30% factor have not been published, the best way to illustrate how the actuaries arrived at the factor is to recreate the calculations.

Therefore, I recorded the average daily closing price of the S&P 500 index on a monthly basis from January 1966 to December 1994. It then became straightforward to calculate the percent change in the index price from month to month. For purposes of this method, the percent change does not include dividends issued by the companies. Since corporate dividends can vary from year to year and are declared at the discretion of the Board of Directors, they are not influenced by market conditions alone. By not including the dividends, the data is more

conservative and will more accurately reflect the volatility of the market and, therefore, the risk of decline in stock value.

The NAIC used rolling periods so that all months would be viewed as starting points. Using a rolling time period is important to the NAIC method because a company buys and sells stocks from its portfolio at different times during the year; therefore, the company's period of ownership can affect the valuation of the company's stocks as the market fluctuates. In determining the RBC factor, the NAIC believed that it would be inappropriate to determine the percent change using the end of the calendar year because this would not take into account the effects of short term market fluctuations on an insurance company's stocks. In addition, a 24 month cumulative time period was used because the NAIC believed that, on average, most life insurance companies hold their stocks for at least two years. The NAIC theorized this to be true because many life insurance companies hold stock for a long period of time in order to smooth the effects of market fluctuations, thereby reducing their risk of devaluation. Additionally, the NAIC considered the fact that it takes time for most insurance companies to receive approval for financial transactions to take place.[10] Therefore, the NAIC deemed that a rolling two year would most accurately represent the investment operations of life insurance companies.

Since the NAIC determined that a rolling two year period was appropriate, the monthly percent changes must be totaled in order to create a cumulative percent change over a two year period, using each month as a starting point for a new two year cycle. Next, the statistical mean and standard deviation for the cumulative percent data must be calculated in order to arrive at the percent change that covers approximately 95% of the data. In this instance, the value for the

95th percentile is -23.99%.* This means that in only 5% of those measurements, a factor greater than 23.99% would be necessary. In an effort to be more conservative, the NAIC rounded the percent up to 30%, the current RBC factor.[11]

The Problem With The NAIC Method

The main problem with the method that the NAIC used to produce the RBC common stock factor is that the same standard factor is used for calculating the common stock risk for every company. This method is not appropriate because each life insurance company will have stock portfolios that are comprised of different securities. Since each stock has a different degree of investment risk associated with it, the combination of different stocks in one portfolio will create a unique degree of risk for that portfolio.

This problem is demonstrated in two ways. First, since the RBC factor is not adjusted based on the risk of each insurer's stock portfolio, one insurer could hold stock in two companies that are considered risky investments because of their high exposure to loss, while another could hold stock in a diverse group of companies with much less risk, but both would be subject to the same RBC common stock factor. By using the S&P 500 index to determine the RBC factor, the NAIC is assuming that the S&P 500 index accurately indicates the risk of an insurer's stock portfolio. However, the insufficiency of the S&P 500 is shown by looking at other stock indexes which track the performances of a different set of stocks. Since each index is comprised of a

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* Since the NAIC's data was collected from January 1966 through December 1991, I recalculated the value for the 95th percentile using data only through December 1991. The result was -26.27% which is only slightly different from the value that was calculated using the data through 1994.

different group of stocks and, therefore, has a different volatility associated with it, it is incorrect to assume that the volatility of the S&P 500 index is equal to the volatility of every life insurer's stock portfolio. Secondly, although the S&P 500 is the most widely used performance benchmark for the U.S. equity markets,[12] it would accurately indicate the volatility for stock portfolios that are comprised only of stocks found in the S&P 500. It seems highly unlikely that all life insurance companies would invest in only stocks found in the S&P 500; therefore, although the S&P 500 index may provide a factor that closely approximates an insurer's risk, there may be another index that is better.

Methodology

In order to demonstrate the differences in volatility that arise by using other market indexes, I recorded the average closing values on a monthly basis for two other indexes, the Dow Jones Industrial Average (DJIA) and the New York Stock Exchange Composite Index (NYSE). I calculated the monthly percent changes and then used those to calculate the cumulative percent change over a rolling two year period, similar to the method that was used for the S&P 500 index by the NAIC. For the same time period that I used in the S&P 500 calculations, January 1966 through December 1994, the DJIA index reported a value of -25.87% for the 95th percentile and the NYSE index reported a value of -22.61%. As the results show, different indexes will report different stock volatilities for the same time period. However, these numbers assume that 95% certainty provides enough assurance that the insurer's stock volatility is accurately reported. To increase certainty, a higher factor must be used. For example, if the

99th percentile was used, the S&P 500 would report a factor of -36.37%, the DJIA would produce -37.72%, and the NYSE would report -33.98%. If a higher factor were used, the insurer's stock holdings would be reduced. However, the NAIC must have decided that the benefits of increased certainty provided by a higher factor would not have been worth the additional costs to the insurers.

The different volatilities for each index are important to the RBC factor because they demonstrate a range of factors that would be appropriate. This casts some doubt about how the NAIC can determine that the S&P 500 most accurately measures the volatility of a life insurer's stock portfolio. Although the range between the different indexes may not be very broad, the differences are accentuated when the NAIC rounds the factor upwards in order to facilitate the RBC calculations and to make the ratio more conservative. For example, consider what would happen if the NAIC determined that the NYSE index most accurately measured life insurer stock volatility. Since the NYSE factor is only -22.61%, the NAIC may determine that rounding up to a factor of 30% would be too conservative and, instead, only round up to a factor of 25%. A smaller factor means that a smaller amount of surplus is needed in case of a decline in stock value, thus freeing money for investment purposes and enabling insurance companies to earn a greater return on their money. Therefore, the NAIC may have sacrificed more life insurance company investment returns than were necessary by using the S&P 500 index in calculating the RBC common stock factor.

One of the best methods of determining whether the S&P 500 index accurately measures the risk of insurance company stock portfolios is to analyze the portfolios of several insurance companies to determine what percentage of their stock investments are in S&P 500 companies.

Since life insurance companies that do business within the state of Illinois are required to submit detailed annual reports to the Department of Insurance in Springfield, I was able to gather information about the 1995 stock holdings of ten different life insurers of various sizes.

The following chart summarizes the information about the insurers that I reviewed. For more specific information, consult Appendix 1.

NAME	$ & % OF STOCK INV	$ OF TOT INV	$ & % OF LARGEST STOCK HOLDING	$ & % IN S&P 500
Jefferson-Pilot Life Ins.	$424,760,921 / 8.61%	$ 4,935,260,201	$22,442,000 / 5.28%	$75,380,690 / 57.25%
The Equitable Life Ass.	57,678,331 / .33%	17,436,487,190	11,400,000 / 19.76%	0 / 0%
Employers Life Ins.	166,945 / .02%	978,843,667	159,625 / 95.62%	0 / 0%
Colonial Penn Life Ins.	483,250 / .08%	638,481,456	409,537 / 84.75%	24,188 / 5.01%
Old Line Life Ins.	0 / 0%	1,084,450,290	0 / 0%	0 / 0%
Colonial Life Ins.	6,037,000 / 1.18%	511,686,842	2,458,500 / 40.72%	4,817,000 / 79.79%
Reliance Std. Life Ins.	25,688,520 / 1.66%	1,544,054,526	14,055,300 / 54.71%	279,200 / 1.09%
Franklin Life Ins.	3,067,844 / .06%	5,553,862,727	3,000,000 / 97.79%	0 / 0%
State Farm Life Ins.	131,668,699 / .77%	16,896,747,188	27,056,890 / 20.55%	224,646,594 / 52.89%
The Equitable Life Ins.	6,465,225 / .28%	2,300,001,559	6,367,925 / 98.50%	0 / 0%

Of the ten insurers I examined, one did not hold any stock. Since the Old Line Life Insurance Company of America is one of the smaller insurers that I reviewed in comparison of the total investment dollars, the most probable reason that it does not own stock is that it determined that the risk would be too great in comparison to the rewards. Many smaller insurance companies do not have a large amount of capital and would not be able to sustain a large decline in asset value. Therefore, such insurers invest in less risky assets, such as bonds, even though they offer a lower return than stocks. For many insurers, the risks of either regulatory action or insolvency are not worth the higher return that is offered by stock ownership.

Of the nine insurers that owned stock, most owned shares of stock that are included in

the S&P 500 index; however, S&P 500 companies did not entirely comprise the portfolios of any of the nine companies. For example, Colonial Penn Life Insurance Company has $24,188 invested in Quantum Corporation, which is listed in the S&P 500 index, but it also has $49,525 invested in Analog Devices Incorporated and $409,537 in the Vanguard Star Fund, which are not listed in the S&P 500. Although the Vanguard Star mutual fund invests in some S&P 500 companies, this fund is not based solely on investments in S&P 500 companies, thereby making the S&P 500 index an inaccurate measure of its volatility.

It is also important to consider the percentage of the total stock portfolio that is invested in each S&P 500 company. Once again considering Colonial Penn's portfolio, 84.75% of its overall unaffiliated stock portfolio is invested in the Vanguard Star fund, 10.25% is invested in Analog Devices, and 5.01% in Quantum Corporation. This shows that the one investment that is made in an S&P 500 stock makes up the smallest portion of Colonial Penn's common stock portfolio. Therefore, if the smallest portion of the portfolio is invested in an S&P 500 company, then the S&P 500 index will not measure the volatility of the portfolio and should not be used for evaluating the insurer's common stock risk.

Diversification is another factor in evaluating an insurer's stock portfolio. Several insurers that I reviewed have tried to diversify their stock portfolios globally by investing in foreign companies. For example, the State Farm Life Insurance Company invests in Kubota Corporation, a Korean company, as well as Reuters Holding PLC and RTZ Corporation PLC, two British companies. Although global diversification is an excellent method for reducing the risk of decline due to movements of the American stock markets, the volatility of foreign markets is not represented in the S&P 500 index and, therefore, the risks of those insurers that

invest in foreign companies are not accurately reflected in the RBC factor. Furthermore, some insurers, such as Colonial Penn, utilize an easy means of diversifying some of the systematic risks of the U.S. market by investing a large proportion of their stock portfolio in a balanced mutual fund. Since balanced funds divide the dollars invested in the fund among equity, bonds, and money market investments, balanced mutual funds are an easy mechanism to achieve diversification. This reduces the risk of asset decline due to market fluctuations more than if the money were invested in a single asset. Although Colonial Penn may have 84.75% of its stock portfolio invested in one balanced mutual fund, Colonial Penn is not subject to as great a risk as the Employers Life Insurance Company of Wausau which has 95.62% of its stock portfolio invested in Emerson Radio Corporation. If the value of the Emerson Radio Corporation stock were to decline, the value of the Employers Life Insurance Company's stock portfolio would significantly decline. This indicates that Employers Life should use a higher RBC factor because the value of the portfolio would be subject to greater volatility.

Something that the RBC factor also does not consider when evaluating the risk of an insurer's portfolio is the percentage invested in one stock in relation to the total amount of the insurer's other stock investments. If the majority of its total investments are in one company, then a decline in the value of that one stock will dramatically affect the condition of the insurer's entire stock portfolio. However, even though an investment in one company might comprise a majority of an insurer's stock investments, a large decline in the value of that company may be offset by large investments in other types of assets. For example, although 95.62% of Employers Life's stock holdings are invested in Emerson Radio stock, it represents less than one-tenth of one percent of the total value of Employers Life's investments. If the value of Emerson Radio

stock dramatically declined, Employers Life's other investments would keep the company from regulatory action.

Although a decline in only one stock may not dramatically affect a life insurance company's portfolio, the effects of a decline in more than one stock at the same time due to market risk could potentially cause dramatic losses. However, for most insurers, their losses would be mitigated since the percentage of money that is invested in common stocks is small in comparison to their total investments. In addition, consider the effects on an insurer if certain asset classes were subject to the same risks. Since bonds are the major investment for most life insurers, the effects of interest rate risk on both stocks and bonds should be considered.

There are clear relationships between interest rate movements and the value of both stocks and bonds. For both classes of investments, the relationship is inverse--as interest rates increase, both the value of stocks and bonds decrease. In order to invest in common stocks, investors demand a certain rate of return (the discount rate) when investing in common stocks. This rate can be thought of as the sum of a risk free rate of return plus a risk premium determined by the risk of the stock being valued. As interest rates rise, the risk free rate also rises and, therefore, so does the required rate of return. Since bonds are fixed income investments, they also are directly affected by interest rate fluctuations. As interest rates rise, investors require a higher rate of return on their bond investments in order to meet the returns offered by other investments. As a result of the upward shift in interest rates, the price of the bonds must decline in order to allow investors to receive their required rates of return. Therefore, if interest rates rise, both the value of stocks and bonds will decline, causing large losses for life insurers because of the covariance of the assets. For example, consider Jefferson-

Pilot Life Insurance Company. If the value of just its stock portfolio declined by 20%, it would lose $84,952,184; however, if both their stock and bond portfolio declined by 20%, Jefferson-Pilot would lose $987,052,040. In this case, the loss caused by the covariance between the stocks and bonds is eleven times as much as the losses generated by the stock portfolio alone. This demonstrates the degree that asset covariance would affect an insurer. However, the large losses due to asset covariance would not be caused by the insurer's investments in common stock, but rather by its investment in bonds.

Conclusion

Since the insurers that I reviewed have only a small percentage of their total investments in common stock, there is no justification for a change in the NAIC's method for determining the RBC factor. Although the NAIC's method may not reflect the risks of life insurer portfolios as accurately as an index specific to each company, even a large decline in the value of the common stocks for the insurers that I reviewed would not create losses that would lead to regulatory action. In addition, even if losses occurred due to asset covariance, it would not be the small percentage invested in common stock that would cause regulatory action, but rather from the large investments in other assets, such as bonds. Considering this, it seems that the NAIC's method for developing its RBC factor for common stock is not unreasonable.

In addition, one must keep in mind the general purpose for developing the RBC regulation: to regulate insurer solvency. By providing a general investment guideline, the RBC formula has encouraged insurers to limit their investments in common stock to minimal levels in

order to prevent both regulatory action and insolvency. As a result, the NAIC has helped insurers plan for their future losses so they will still be able to meet their contractual obligations to their policyholders. Therefore, since the RBC formula still continues to fulfill its intended purpose, policyholders should have confidence that the RBC regulation will help maintain the safety and soundness of the life insurance system.

The Jefferson-Pilot Life Insurance Company

Public Utilities	Market Value	%
AT&T Corp Com	$7,057,750	1.66
Allegheny Power System Inc Com	9,869,900	2.32
American Electric Power Co Com	6,804,000	1.60
Balt Gas & Elec Com	5,023,382	1.18
Bellsouth Corp Com	18,578,850	4.37
Cipsco Inc Com	8,862,750	2.09
Consolidated Edison Co of NY Com	952,500	0.22
Dominion Resources Inc Com	7,431,146	1.75
Duke Power Co Com	7,716,061	1.82
FPL Group Inc Com	10,326,733	2.43
Florida Progress Corp Com	6,190,625	1.46
KU Energy Corp Com	3,834,000	0.90
L G & E Energy Corp Com	7,858,500	1.85
Northeast Utilities Com	12,660	0.00
P P & L Resources Inc Com	6,561,200	1.54
Pacific G & E Com	810,163	0.19
Pacific Telesis Group Com	1,608,000	0.38
Pacificorp Com	1,997,073	0.47
Piedmont Nat Gas Com	7,509,983	1.77
Potomac Electric Power Co Com	6,433,665	1.51
Public Svc Co NC Com	2,496,512	0.59
Pub Ser Enterprise Grp Com	11,328,953	2.67
SBC Communications Inc Com	22,442,000	5.28
SCE Corp Com	3,810,666	0.90
Scana Corp Com	15,692,855	3.69
Southern Company Com	5,644,050	1.33
Sprint Corp Com	11,787,883	2.78
Texas Utilities Co Com	3,136,664	0.74
Tucson Electric Power Co Com	449,248	0.11
WPS Resources Corp Com	1,326,000	0.31
Wisconsin Energy Corp Com	8,375,784	1.97
Total Public Utilities	**$211,931,556**	49.89
Industrial & Miscellaneous		
Abbott Laboratories Com	$1,540,125	0.36
Allied Signal Inc Com	1,187,500	0.28
American Express Co Com	827,500	0.19
Amgen Inc Com	593,750	0.14
Amoco Corporation Com	4,576,000	1.08
Anheuser-Busch Companies Inc Com	936,250	0.22
Atlantic Richfield Com	3,211,750	0.76
Bristol-Myers Squibb Co Com	6,011,250	1.42
CPC International Inc Com	617,625	0.15
Campbell Soup Co Com	2,340,000	0.55
Chevron Corporation Com	2,618,750	0.62
Circuit City Stores Com	690,625	0.16
Coca Cola Co Com	742,500	0.17
Colgate-Palmolive Co Com	913,250	0.22
Columbia/HCA Healthcare Com	1,624,000	0.38
Conagra (GTR) Com	948,750	0.22
Conrail Inc Com	2,730,000	0.64
Countrywide Credit Industries Com	865,000	0.20
DSC Communications Corporation Com	737,500	0.17
The Walt Disney Co Com	1,707,375	0.40
DuPont E I De Nemours & Co	4,066,725	0.96
Emerson Electric Co Com	899,250	0.21
Executone Information Systems	4,438	0.00
Exxon Corp Com	7,647,500	1.80
Federated Department Stores Com	463,250	0.11
Ford Mtr Com	3,465,000	0.82
GTE Corporation Com	18,284,906	4.30
General Electric Co Com	1,425,600	0.34
General Instruments Corp Com	233,750	0.06
General Mills Inc Com	808,500	0.19
Gen Mtrs Corp Com	717,831	0.17
Grancare Inc Com	203,000	0.05
Heinz H J Company Com	318,000	0.07
Hercules Inc Com	676,500	0.16
Hershey Foods Corp Com	1,755,000	0.41
Hewlett Packard Co Com	1,423,750	0.34
Home Depot Inc Com	811,750	0.19
Intel Corporation Com	567,500	0.13
IBM Corp Com	913,750	0.22
Intl Paper Co Com	3,229,677	0.76
Kimberly Clark Corp Com	6,951,000	1.64
Lilly (Eli) & Co Com	1,125,000	0.26
Marcum Natural Gas Services	13,896	0.00
Merck & Company Inc Com	5,906,250	1.39
Mobil Corporation Com	6,593,250	1.55
Morton International Com	717,500	0.17
Motorola Inc Com	1,767,000	0.42
Norfolk Southern Corp Com	1,349,375	0.32
North Carolina Railroad Co Com	5,397,000	1.27
Novell Inc Com	570,000	0.13
PMT Services Inc Com	168,341	0.04
PPG Industries Inc Com	3,065,250	0.72
Pepsico Inc Com	1,285,125	0.30
Pfizer Inc Com	1,071,000	0.25
Phillips Pete Com	682,500	0.16
Phycor Inc	264,391	0.06
Sara Lee Corp Com	1,312,000	0.31
Schering Plough Corp Com	3,120,750	0.73
Schweitzer-Mauduit Intl Inc Com	194,250	0.05
Sigma-Alrich Com	1,089,000	0.26
Teppco Partners LP Com	1,091,250	0.26
Texaco Inc Com	1,491,500	0.35
Union Pacific Com	1,320,000	0.31
United Technologies Corp Com	1,897,500	0.45
Varian Associates Com	957,500	0.23
Wal-Mart Stores Com	1,735,500	0.41
Warner Lambert Company Com	3,671,325	0.86
Xerox Corp Com	2,055,000	0.48
Total Industrial & Miscellaneous	**$140,197,630**	33.01
Banks, Trusts & Insurance Companies		
Bank South Corp Com	$12,144,624	2.86
Barnett Banks Com	590,000	0.14
CCB Financial Corp Com	2,386,500	0.56
CIGNA Corp Com	7,847,000	1.85
Capital One Financial Corp Com	2,419,779	0.57
Chase Manhattan Corp Com	13,402	0.00
First Union Corp Com	19,638,462	4.62
Lincoln National Corp Com	6,450,000	1.52
Nationsbank Corp Com	8,076,500	1.90
Signet Banking Corp Com	2,407,110	0.57
Suntrust Banks Com	7,281,276	1.71
Wachovia Corp Com	3,377,082	0.80
Total Banks, Trusts & Insurance Co's	**$72,631,735**	17.10
Total Unaffiliated Common Stock	**$424,760,921**	100.00
Total Investments (Bonds & Stock) at Market	**$4,935,260,201**	
% Investment in Common Stock		8.61

The Colonial Penn Life Insurance Company

Industrial & Miscellaneous	Market Value	%
Analog Devices Incorporated	$49,525	10.25
Quantum Corporation	24,188	5.01
Vanguard Star Fund	409,537	84.75
Total Industrial & Miscellaneous	**$483,250**	100.00
Total Unaffiliated Common Stock	**$483,250**	100.00
Total Investments (Bonds & Stocks) at Market	**$638,481,456**	
% Investment in Common Stock		0.08

The Old Line Life Insurance Company of America

	Market Value	%
Total Unaffiliated Common Stock	**$0**	100.00
Total Investments (Bonds & Stocks) at Market	**$1,084,450,290**	
% Investment in Common Stock		0.00

The Colonial Life Insurance Company of America

Industrial & Miscellaneous	Market Value	%
Dow Chemical Co	$1,826,500	30.26
Hanson PLC	1,220,000	20.21
Mobil Oil Corp	2,458,500	40.72
Total Industrial & Miscellaneous	**$5,505,000**	91.19
Banks, Trusts & Insurance Companies		
Bankers Trust New York	$532,000	8.81
Total Banks, Trusts & Insurance Co's	**$532,000**	8.81
Total Unaffiliated Common Stock	**$6,037,000**	100.00
Total Investments (Bonds & Stocks) at Market	**$511,686,842**	
% Investment in Common Stock		1.18

The Reliance Standard Life Insurance Company

Industrial & Miscellaneous	Market Value	%
American West Airlines	$299,642	1.17
Cadence Design Systems Inc	83,790	0.33
Central Transport Rental	521,618	2.03
Cleveland Cliffs Inc	401,349	1.56
Continental Airlines	5,510,624	21.45
Continental Information System	65,925	0.26
Envirotest Systems Corp	164,588	0.64
FHLB-Pittsburgh	14,055,300	54.71
Flagstar Companies Inc	29,303	0.11
Great North Iron Ore PPTY	651,836	2.54
Inamed Corp	236,767	0.92
Interlake Corp	279,200	1.09
James River Corp of Virginia	199,031	0.77
LTV Corp	42,666	0.17
LTV Corp Warrants	3,080	0.01
Media Vision Technology	321,116	1.25
Mesabi Trust	569,209	2.22
Nokia Corp	1,190,475	4.63
RF Monolithics Inc	33,006	0.13
Thrifty Payless	452,025	1.76
Topps Company	460,112	1.79
Westmin Resources	44,200	0.17
Total Industrial & Miscellaneous	**$25,614,862**	99.71
Banks, Trusts & Insurance Companies		
Continental Bank of Canada	$73,658	0.29
Total Banks, Trusts & Insurance Co's	**$73,658**	0.29
Total Unaffiliated Common Stock	**$25,688,520**	100.00
Total Investments (Bonds & Stocks) at Market	**$1,544,054,526**	
% Investment in Common Stock		1.66

The Franklin Life Insurance Company

Industrial & Miscellaneous	Market Value	%
Serologicals Inc	$67,844	2.21
Total Industrial & Miscellaneous	**$67,844**	2.21
Banks, Trusts & Insurance Companies		
Fidelity Global Yield Trust	$3,000,000	97.79
Total Banks, Trusts & Insurance Companies	**$3,000,000**	97.79
Total Unaffiliated Common Stock	**$3,067,844**	100.00
Total Investments (Bonds & Stocks) at Market	**$5,553,862,727**	
% Investment in Common Stock		0.06

The Equitable Life Assurance Society of the U.S.

Industrial & Miscellaneous	Market Value	%
Advanced Robotics Corp Com	$1,068,370	1.85
AMA Management Com	98,661	0.17
American Fincl Corp Com	612,500	1.06
Aquagenix Inc Warrants	208,840	0.36
Arbor Property Trust Com	3,123,345	5.42
ASR Industries Com	774,884	1.34
AVI Holdings Inc Warrants	37,500	0.07
Burlington Holding Com	3,883,705	6.73
Capital Gaming Com	23,336	0.04
Cardinal Services Inc Warrant	10,000	0.02
CHC Helicopter Corp Warrants	16,000	0.03
Chips & Technologies Inc Com	450,000	0.78
MVE Holdings Inc Warrant	187,500	0.33
NHP Inc Com	798,437	1.38
Old America Store Com	2,031,095	3.52
Onex Food Services Com	653,834	1.13
Onex Food Services Warrants	577,654	1.00
Outdoor Advertising Hldg Com	27,742	0.05
Petro Finl Corp Warrants	327,567	0.57
SDL Inc Com	1,367,304	2.37
Servico Inc Com	1,098,415	1.90
Showboat Inc Warrants	206,935	0.36
SMG Holdings Corp Com	11,400,000	19.76
Southern Bakeries Inc Warrants	250,000	0.43
SWO Corp Com	293,716	0.51
Terex Corp Rights	304,000	0.53
The Levinson Steel Co Com	31,764	0.06
Transamerican Refining Corp Warrants	1,675,886	2.91
U.S. Foodservice Inc Com	7,729,567	13.40
Ultratech Stepper Inc Com	257,500	0.45
Uniroyal Technology Warrant	281,250	0.49
United Auto Group Inc Warrant	785,680	1.36
Wolverine (Massachusetts) Corp Warrant	941,175	1.63
Yes Group Inc Warrants	14,001	0.02
Zale Corp Com	16	0.00
Europolis Invest Com	1,783,669	3.09
Total Industrial & Miscellaneous	**$43,331,848**	75.13

Public Utilities		
Bulk Materials Inc Com	$2,088,063	3.62
Great Bay Power Co Com	959,983	1.66
Total Public Utilities	**$3,048,046**	5.28

Banks, Trusts & Insurance Companies		
Berg Electronics Inc Com	$179,760	0.31
USAT Holdings Inc Com	11,118,677	19.28
Total Banks, Trusts & Insurance Co's	**$11,298,437**	19.59
Total Unaffiliated Common Stock	**$57,678,331**	100.00
Total Investments (Bonds & Stock) at Market	**$17,436,487,190**	
% Investment in Common Stock		0.33

The Employers Life Insurance Co. of Wausau

Industrial & Miscellaneous	Market Value	%
Emerson Radio Corp	$159,625	95.62
Stokely USA Inc	7,320	4.38
Total Industrial & Miscellaneous	**$166,945**	100.00
Total Unaffiliated Common Stock	**$166,945**	100.00
Total Investments (Bonds & Stocks) at Market	**$978,843,687**	
% Investment in Common Stock		0.02

The State Farm Life Insurance Company

Industrial & Miscellaneous	Market Value	%
Air Products & Chemicals Inc	$2,637,500	2.00
Airtouch Communications Inc	1,687,500	1.28
Archer-Daniels-Midland Co	3,844,440	2.92
Atlantic Richfield Co	1,993,500	1.51
Capital Cities/ABC Inc	3,084,375	2.34
Caterpillar Inc	2,937,500	2.23
Coca Cola Co	3,341,250	2.54
Corning Inc	3,200,000	2.43
Dynamics Corp of America	702,219	0.53
Exxon Corp	4,508,000	3.42
General Electric Co	2,592,000	1.97
Great Lakes Chemical Corp	3,816,000	2.90
Hewlett Packard Co	3,852,500	2.93
Intel Corp	1,702,500	1.29
International Flavors & Fragrances	3,120,000	2.37
Johnson & Johnson	4,018,500	3.05
Kellog Co	4,248,750	3.23
MCI Communications	2,952,125	2.24
Minnesota Mining & Manufacturing	4,712,625	3.58
Motorola Inc	3,135,000	2.38
Pfizer Inc	4,410,000	3.35
Pogo Producing Co	27,056,890	20.55
Rubbermaid Inc	2,626,500	1.99
Sigma-Aldrich Corp	3,019,500	2.29
Wal-Mart Stores Inc	801,000	0.61
Kubota Corp	2,946,400	2.24
Reuters Holding PLC	2,756,250	2.09
RTZ Corporation PLC	2,185,000	1.66
Total Industrial & Miscellaneous	**$107,887,824**	81.94

Public Utilities		
AT&T Corp	$2,978,500	2.26
Pacific Telesis Group	4,020,000	3.05
Pacificorp	3,485,625	2.65
SBC Communications	3,950,250	3.00
Total Public Utilities	**$14,434,375**	10.96

Banks, Trusts & Insurance Companies		
Norwest Corp	$2,640,000	2.01
PNC Bank Corp	3,870,000	2.94
Wachovia Corp	2,836,500	2.15
Total Banks, Trusts & Insurance Co's	**$9,346,500**	7.10
Total Unaffiliated Common Stock	**$131,668,699**	100.00
Total Investments (Bonds & Stocks) at Market	**$16,896,747,188**	
% Investment in Common Stock		0.7793

The Equitable Life Insurance Co. of Iowa

Industrial & Miscellaneous	Market Value	%
City Center Corp	$59,800	0.92
Civic Center Court Inc	37,500	0.58
G G P Homart Inc	6,367,925	98.50
Total Industrial & Miscellaneous	**$6,465,225**	100.00
Total Unaffiliated Common Stock	**$6,465,225**	100.00
Total Investments (Bonds & Stocks) at Market	**$2,300,001,559**	
% Investment in Common Stock		0.28

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3. Meg Fletcher, "Risk-Based Capital Standards Proposed For Life/Health Insurers," Business Insurance, (September 28, 1992), 1.

4. Joseph M. Belth, ed., The Insurance Forum, 20 (1993), 115.

5. Meg Fletcher, p. 1.

6. "RBC Technical Overview," Best's Review, 93 (1992), 14.

7. Risk-Based Capital For Life Insurers: Catalyst For Change, (New York: Conning & Company, 1993), p. 25.

9. Bernard L. Webb, FCAS and Claude C. Lilly III, Ph.D., Raising The Safety Net: Risk Based Capital For Life Insurance Companies (New York: NAIC Publications, 1994), p. 28.

10. Michael L. Zurcher, FSA, Lincoln National Corporation, personal interview.

10. Zurcher, personal interview.

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12. S&P 500: 1993 Directory, vol. 5 (New York: Standard & Poors, 1993), p. 3.

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