

# **Risk-Based Insurance Solvency Regulation in the U.S.**

Presented at World Bank Contractual Savings Conference  
Supervisory and Regulatory Issues in Private Pensions and Life Insurance.  
November 3-7, 2003  
Washington, D.C.

by

Michael M. Barth, Ph.D.  
Assistant Professor of Finance  
Department of Finance and Quantitative Analysis  
College of Business Administration  
Georgia Southern University  
Statesboro, GA 30458-8151  
Phone: (912) 681-0259  
email: mbarth@gasou.edu

## **Introduction**

Under the U.S. insurance regulatory structure, insurance companies are regulated by each of the individual state governments. Unlike the banking system, there is no central federal regulatory authority, although that is subject to change. The chief insurance regulator in each state is responsible for monitoring the financial health of all insurance carriers operating within the state's borders, which leads to a fractured system where a large national insurance company must respond to regulatory requirements from 50 different state insurance commissioners. Although each individual state is tasked with monitoring the solvency of all licensed insurers in that state, in an effort to achieve greater efficiency, each individual state focuses primarily on its own domestic insurers and cooperates with the other states to monitor insurers whose headquarters is in another state. To that end, the states use the facilities of the National Association of Insurance Commissioners (NAIC) to assist those monitoring efforts.

The NAIC is a nonprofit organization whose members are the state insurance commissioners in each of the fifty United States plus several territories and the nation's capital. The NAIC has no regulatory or enforcement power, but instead serves as an information clearinghouse and a coordination bureau. The NAIC maintains a large database that contains detailed financial statement data on most of the insurance companies operating in the U.S. as well as a number of non-U.S. companies. The cooperation fostered through the offices of the NAIC lead to what has been described as "national" regulation rather than federal regulation. However, following some significant

changes in the regulatory landscape in the last few years, there have been renewed calls to replace this fractured system of state regulation with something that would include federally mandated solvency standards.

The process of efficiently regulating the financial services industry in the U.S. is constantly evolving. One of the more important transformations in recent years has been the increasing trend towards risk-based supervision. Risk-based supervision is a term that means different things to different people, so the first step in explaining the risk-based supervision system in the U.S. is to provide a definition of what is meant by the term:

**Risk-Based Supervision (RBS):** A regulatory process where scarce regulatory resources are allocated on a priority basis to those companies, practices and procedures that pose the greatest source of risk to the continued stability of insurance markets. The overarching goal of an RBS system is the minimization of the total cost of insolvency risk, whether those costs are direct losses from insurance company failures, the costs of preventing those insolvencies, or the costs associated with financing those insolvencies that inevitably do occur.

Under an RBS-oriented system, the regulator takes on the role of overseer in much the same manner that economic theory assumes that owners perform oversight of a corporation. That is, a corporation's owners hire managers to handle the day-to-day operations of a business while the owners continue to maintain command and control through the board of directors. While this is good economic theory, it is not always good economic reality. Regulators are hired to protect the interests of all of the absentee parties: the owners themselves to some extent, but more importantly, the policyholders. In some regulatory structures, the regulator is seen as the senior partner, dictating rules to the managers of the insurer. Under an RBS-oriented system, though, the regulator should be seen more as a member of the board of directors, helping to guide the actions of managers but leaving the day to day decision-making in the managers' capable hands.

Insurance companies have internal management controls that they use to monitor the day to day operations of the company. Thus, one of the key facets of RBS is an increased emphasis on the evaluation of those management *controls* rather than the evaluation of managerial outcomes. That is, rather than prescribe specific behaviors to mitigate insolvency risk, regulators are increasingly focusing their efforts on ensuring that management is first aware of, and second taking appropriate steps to control, the insolvency risk of the company.

A good example of that new emphasis on management evaluation is the Risk-Based Capital (RBC) standards implemented in the mid-1990s. Traditionally, states used a "bright-line" rule for establishing minimum capital standards for insurers. Those minimum capital standards were typically on the order of \$1 million or \$2 million of required capital and surplus, which might be a significant amount for a start-up insurance company or a very small insurance company, but which are insignificant for a large national or multi-national life insurance operation. RBC was instituted to replace the

simple objective rule of “at least \$2 million of capital” with a more subjective rule: “the greater of \$2 million of capital OR an amount determined by a formula applied to the balance sheet and income statement of each insurer that determines a minimum capital amount commensurate with commonly accepted risk assessment measures that can be redefined as the need arises.” The new rule may be a mouthful to say, but it is really simple in concept: insurers need to have “enough” capital, with “enough” being defined on a moving scale.

As a further refinement, the new minimum capital levels under the RBC formula also included special requirements for those companies that have “enough” capital but are too close to the minimum limit for comfort. Those companies that are close to the minimum are required, by law, to write a detailed report first explaining how they came to be so close to the minimum level of capital and then explaining the steps that they are going to take to either raise additional capital or lower the company’s risk posture. The regulator does not step in and take charge, but rather evaluates the company management’s own explanation of the problem and its planned corrective action. If the insurer fails to provide an adequate explanation, though, the regulator is empowered to take more draconian actions to force that compliance.

Another example of the evolution of regulatory philosophy is the revised model investment law that was developed in the 1990s. Although U.S. insurance companies have traditionally limited their investments to high quality bond portfolios, some insurers had become financially impaired by investing in high risk bonds and risky real estate. In response to some large insolvencies that occurred in the early 1990s, state regulators began developing a model investment law to proscribe such practices, and early versions of the new model law used a “pigeonhole” approach that specified maximum percentages of specific investments (e.g., “no more than 20% invested in equity securities”). As the model was developed, though, what eventually emerged was a model law based on the “prudent man” standard. Under the prudent man standard, insurers are expected to be able to justify their investment strategies but are not expected to follow a specific formula. This allows the insurance company the freedom to invest in what it needs to invest in, but the insurance company’s managers are still held to the standard of “would a prudent person follow this strategy?” Again, one of the guiding principles of the new RBS-oriented system of regulation is to allow the insurance company’s managers to manage the insurance company while the insurance regulator asks them the pointed questions that the absentee owners and policyholders cannot.

## **Setting Proper Regulatory Risk Management Goals and Objectives**

The overarching goal of risk management in the commercial firm is to minimize the overall cost of risk. Those costs of risk include not only the cost of the losses (which can be easily observed and quantified), but also indirect loss costs that are more difficult to isolate and quantify. The cost of risk also includes all costs associated with loss prevention efforts, all costs associated with loss financing efforts, and all additional costs that arise because of the inability to totally eliminate residual uncertainty. The goal of

efficient management of risk in the corporation is to minimize the total cost of risk, not just the cost of losses. There are some costs that are cheaper to absorb as part of doing business rather than to either prevent or to finance through insurance. A typical example is pilferage in a grocery store. It is not worth the additional expense to erect security measures to prevent small pilferage losses, and it is not worth the expense to purchase pilferage insurance. On the other hand, fire prevention at a factory is certainly worth the effort, as is the expense of fire insurance. The efficient firm minimizes costs through the combination of prevention, financing and retention that maximizes overall value.

Regulators are faced with the same goals and objectives. The goal of regulatory risk management should be to minimize the overall cost of insolvency risk so as to maximize efficiency and therefore minimize the overall cost to society. The regulator must evaluate both direct and indirect loss costs, such as the cost of unpaid or delayed claims and the cost of the market uncertainty that emerges in the wake of an insolvency. These costs are often the focus of attention, but are not necessarily the largest component of the overall cost of risk. The regulatory effort to prevent insolvency itself costs money. Salaries of regulatory staff, offices, computers and overhead expenses must be factored into the overall cost of risk. Additionally, there are regulatory compliance costs that must be paid by the insurers themselves, and these costs can be substantial, especially for smaller insurance organizations. These prevention costs should be weighed against the cost of the insolvency itself, because in many instances it is less costly to simply close down an impaired insurer than to force the insurer to take Herculean efforts to prevent the impairment from taking place.

Some insolvencies are a natural facet of business life. Smaller insurers tend to have higher insolvency risk than larger insurers, but by the same token the direct and indirect costs of an insolvency are lower for a smaller insurer relative to a larger insurer. Therefore, the most cost efficient method of dealing with the “small” insolvency is simply to finance the costs so as to minimize market disruption in the wake of that insolvency. In the U.S., each of the individual states has in place a solvency guaranty fund that pays the claims for the insolvent insurer. The guaranty funds are part of the loss financing efforts rather than part of the loss prevention efforts, and these costs include both the administrative costs associated with the management of the guaranty fund as well as the cost of the losses themselves. Each state’s guaranty fund assesses the insurers in that state for a pro rata share of the insolvency costs paid by the guaranty fund, and those insurers in turn pass those costs on to policyholders (through policy surcharges) and to state taxpayers (through tax offsets for guaranty fund assessments).

The appropriate regulatory goal is to minimize the overall cost of regulation. It may turn out to be cheaper in the long run to allow some insurers to fail, while in other situations extraordinary regulatory efforts might be warranted to keep an insurer afloat. Similarly, monitoring costs money for both the regulator and the regulated, and there must be a cost-benefit tradeoff that assures the greatest overall benefit for the lowest overall cost.

## **Identifying, Measuring and Quantifying Risk**

A discussion of insurer solvency monitoring systems generally conjures up images of financial ratios, desk audits and financial examinations. Those are certainly part of the system, but other more subtle and indirect regulatory practices have also been instituted in the U.S. market to enhance solvency monitoring efforts.

### ***Direct Solvency Monitoring Tools***

The most well-known regulatory solvency monitoring systems employed in the U.S. are the Insurance Regulatory Information System (IRIS) ratio system, the Financial Analysis Solvency Tools (FAST) ratio-based risk scoring system, and the Risk-Based Capital (RBC) system. These systems were developed at different times and by design have different areas of emphasis, but they are meant to work together, as part of a coordinated solvency monitoring approach, rather than as stand-alone systems.

Of the three systems, the IRIS ratio-based system is the oldest. The IRIS ratios are a series of a dozen simple financial ratios that feature a range of “normal” values, with no further distinction to determine what is actually normal for a particular insurer. First introduced in the mid-1970s, the ratios and the “usual values” associated with the ratios have been modified to some extent over the years but are largely unchanged since the inception of the system. This information is public knowledge, as are individual company results, and these ratios provide both regulator and regulated with some simple rules of thumb to help establish simple standards of financial performance.

Ratio	Description	Usual Values
1	Net Change in Capital and Surplus	-10%<>50%
1A	Gross Change in Capital and Surplus	-10%<>50%
2	Net Income to Total Income	>0%
3	Commission & Expenses to Premiums & Deposits	n/a
4	Adequacy of Investment Income	>125%,<900%
5	Non-Admitted to Admitted Assets	<10%
6	Real Estate/Mortgages to Cash & Invest Assets	<30%
7	Affiliated Investments to Capital and Surplus	<100%
8	Surplus Relief	
	Capital/Surplus under \$5 million	-10%<>10%
	Capital/Surplus over \$5 million	-99%<>30%
9	Change in Premium	-10%<>50%
10	Change in Product Mix	<5%
11	Change in Asset Mix	<5%
12	Change in Reserving Ratio	-20%<>20%

Source: NAIC IRIS Handbook.

However, the IRIS ratios are not used to flag insolvent companies. Rather, they are one of a series of standards that are used to prioritize insurance companies for further analysis by seasoned financial examiners. Shortcomings in the ratios themselves are readily acknowledged, and some discussion of those shortcomings is published in a handbook every year that details the formula results. Since everyone knows the formulas as well as the range of the “normal” values, the formula results are relatively easy to game by insurance managers, and a certain amount of “window-dressing” is expected. However, since many of the ratios include capital and surplus in one way or another, financial impairment is not necessarily easy to disguise.

In addition to IRIS, there is the FAST ratio system that was developed in the early 1990s. Unlike the IRIS ratio results, the FAST ratio results are kept secret. In addition, rather than a simple pass/fail test, the normal range for the FAST ratios features a sliding points scale which helps to prioritize regulatory attention towards those insurers that exhibit the greatest amount of deviation from “normal” ranges.

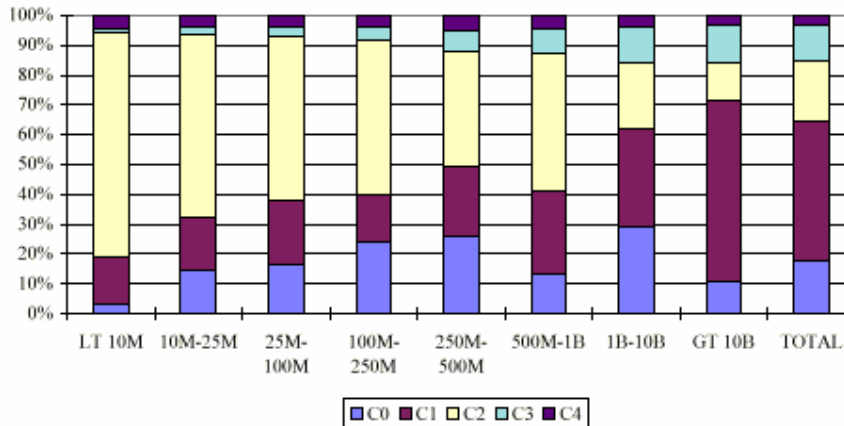
The third leg of the solvency monitoring trio is the risk-based capital (RBC) formula. The RBC formula is a complex calculation that generates a hypothetical minimum capital amount by multiplying risk factors against balance sheet and income statement values, as well some off-balance sheet financial values. The results are then compared to the insurer’s adjusted capital, which includes the insurer’s capital and surplus and some special adjustments, such as the Asset Valuation Reserve. The RBC formula results are split into five “action levels”:

- No Action – this means that the company has sufficient capital and surplus to have passed the test
- Company Action Level – this level requires the insurance company to file a detailed explanation and a plan of action to either increase its capital or reduce its risk. While not financially impaired enough to warrant direct regulatory action, the insurer is nonetheless required to explain itself.
- Regulatory Action Level – this level requires the insurance company to file a plan, but also warrants financial examination by state authorities.
- Authorized Control Level – this level is analogous to the minimum capital standard, and an insurer that falls into this category may be placed under regulatory authority, although the insurance commissioner has some discretion.
- Mandatory Control Level – at this level, the state insurance commissioner is required to take steps to place the insurer under regulatory control.

The complex nature of the RBC formula, and the detailed report that insurers are required to file, help both the regulator and the regulated to evaluate the problem area or areas that have lead to financial impairment. The tiered level of response to financial trouble provides the state insurance authority with great deal of flexibility in dealing with a troubled insurance company. At the same time, the inclusion of a mandatory control level also places a bright-line rule on the ability of the insurance regulator to practice forbearance.

# Life Industry Aggregate RBC By Size

Figure 1  
Percentage of Total RBC By Covariance Component



Source: NAIC Research Quarterly April 1997, page 37

The NAIC's RBC formula is applied uniformly to all insurance companies, but the types of risks differ from company to company. Most small life insurers have little or no asset risk, and the RBC formula results reflect that. The smaller insurers do, though, have relatively more underwriting risk than their larger counterparts. This is partly a function of the types of business (there is relatively more health business in the group of smaller life insurance companies) and the relative risk of the business. On the other hand, larger life insurance companies, simply by virtue of their size, are able to absorb more investment risk and the RBC formula results show that.

## *Indirect Solvency Monitoring Tools*

Loosely speaking, "insolvency" occurs when an insurer's liabilities exceed its assets – when it owes more than it owns. Statutory accounting practices in the U.S. are designed to trigger "financial impairment" long before there is a true impairment. To do that, the accounting rules tend to deflate the value of assets and inflate the value of liabilities. Therefore, when equity reaches zero and liabilities exactly equal assets in an accounting sense, the assets are already understated and the liabilities are already overstated. On a market value basis, then, there are often still sufficient assets to pay the liabilities of the insurer without resorting to external financing means.

Additionally, there are other accounting rules that are used to overstate liabilities as well. The Asset Valuation Reserve and the Interest Maintenance Reserve are two examples. These accounts have the effect of reducing the reported equity of the insurance company,

based on the type of assets the insurance company invests in. The higher the risk of the assets, the greater the reduction. These accounts are also “risk-based” in that the larger insurance companies tend to have relatively larger reductions of equity than smaller insurance companies, commensurate with the type of assets that the larger companies tend to invest in. The table below shows that larger insurers (in this example, those with \$1 billion of assets or more) have an average reduction of 15 percent of “real” capital from these adjustments, while smaller insurers have little or no reductions. The accounting rules are applied uniformly, but the result is that the rules turn out to be more stringent on the larger insurers than on the smaller insurers. The financial impairment of a large insurer puts a greater strain on the financial markets than the financial impairment of a smaller insurer, so the effect of this particular accounting rule is to hold the larger insurers to a relatively higher standard.

Asset Size	Admitted Assets	Statutory Capital	Adjusted Capital	% Difference Between Adjusted and Statutory Capital
\$2M to \$25M	4,053,386,349	2,215,111,157	2,202,452,871	0.6%
\$25M to \$100M	10,438,123,312	3,828,834,088	3,941,125,500	-2.8%
\$100M to \$1,000M	118,738,269,254	27,776,750,176	29,159,465,057	-4.7%
\$1,000M +	2,109,371,223,596	201,088,467,135	237,648,185,494	-15.4%

The role of private rating agencies such as the A.M. Best Company and Standard & Poors in evaluating insurance companies is well known. What is sometimes overlooked, though, is the role that regulators have had in helping those organizations to accomplish their missions.

U.S. insurers file a detailed financial statement every quarter, with an even greater level of detail in the annual filing. Since its inception, the NAIC has been instrumental in encouraging uniformity in the accounting practices and procedures and in the accounting reports submitted by U.S. insurers. The annual statement blank includes an incredible amount of detail and can easily run to hundreds of pages. Another of the RBS-oriented initiatives of the 1990s was the conversion to electronic reporting. Today, virtually all of the massive amount of information that is the annual statement is collected electronically, which makes the job of industry watchers considerably easier. Further, the NAIC provides access to that data (albeit for a price) to private organizations that evaluate totals and trends for individual companies as well as for the industry as a whole. Regulators continue to make a conscious effort to improve the quality and quantity of information available to regulators and non-regulators alike to evaluate the financial health of the industry.

Although industry complaints about the cost of compliance with the information requirements are often loud and angry, the information flow actually reduces the need for

more obtrusive regulatory monitoring. Because many eyes are examining each company's activities, there is less of a need for direct on-site field examinations by the state regulator. Banking regulators typically perform on-site audits at least annually, as compared to the three-to-five year schedule of on-site audits for insurance companies. The level of detail provided in the annual statement filings allows regulators to perform more of their audit functions off-site, and also allow regulators to better target those on-site audits to where they will do the most good.

Additionally, the private rating services demand less specialty information from insurers because of the amount of public information provided through the common reporting requirements. The direct costs of compliance, such as the database fees paid by insurers that submit information to the NAIC, are visible reminders of the costs of regulation. The indirect cost savings that are generated because of the widespread availability of detailed, standardized financial information on virtually all insurance companies in the market are less visible but are nonetheless substantial.

## **The Costs of Financing Insolvency**

If there is one area where the new RBS orientation has not been firmly applied, it is the solvency financing area. Under the current system, each state operates its own guaranty fund to pay the costs arising from insurance insolvencies. The individual state life insurance funds are coordinated through the National Organization of Life/Health Guaranty Associations (NOLHGA), and there is a separate set of funds and a separate national organization that handles non-life insolvencies. Each state operates its own fund separately, and it can be argued that the fractured system is less efficient than a centralized national fund, but to date there have been relatively few life/health insurer insolvency costs to actually allocate.

The insurance companies that operate in that state are assessed for the loss costs and the administrative expenses based on premium volume. Assessments are on a post-insolvency basis by design, at least partially to alleviate the temptation of cash-strapped state governments to raid a pre-insolvency fund. Although the insurers in each state are assessed for the costs of the guaranty fund, they are also allowed to include an expense charge for those expenses in premium loadings and are granted premium tax offsets for assessments, so in that sense the costs are borne somewhat by insurance purchasers but mostly by the general public.

**Life/Health Guaranty Fund Assets, 1992-2001**

<b>Year</b>	<b>Life</b>	<b>Health</b>	<b>Annuity</b>	<b>Unallocated Annuity</b>	<b>Total</b>
1992	290,477,495	85,141,086	322,224,385	37,523,670	735,336,636
1993	274,357,919	52,294,052	284,423,521	20,636,239	631,711,731
1994	365,748,098	83,458,686	356,032,114	36,099,749	841,338,647
1995	431,717,185	20,146,836	370,269,074	53,555,104	875,688,199
1996	175,196,043	19,799,299	308,642,745	72,472,802	576,090,889
1997	123,707,333	7,203,224	272,967,893	43,705,520	447,583,970
1998	121,154,935	5,372,791	137,409,766	7,088,988	271,026,480
1999	94,905,739	28,564,235	36,085,149	7,377,472	166,932,595
2000	53,672,124	26,532,672	63,296,132	5,870,275	149,371,203
2001	24,411,353	71,694,217	26,745,590	1,706,352	124,557,512

Source: National Organization of Life/Health Guaranty Associations

The guaranty fund assessments are “risk-based” to the extent that they are based on direct written premiums, and direct written premiums should be equal to the present value of all future claims and expenses of those policies. However, “risk-based” is a relative concept. While a uniform assessment of two percent of direct written premiums is more risk-based than a flat dollar assessment (e.g., \$10,000 per company), it is still far short of a true risk-based pricing system.

The lack of risk-based pricing creates a potential problem of adverse selection and moral hazard in the current regulatory design. For individual life insurance policyholders, there is essentially full protection from solvency losses under the guaranty funds, yet the price that they pay for that protection is identical regardless of the risk of the company they purchase insurance coverage from. This gives insurance consumers an incentive to purchase the lowest priced coverage, regardless of the level of solvency risk. There are other factors involved in the purchase decision, and not all customers are driven by price alone. Indeed, some consumers, particularly for life products, seek information on an insurer’s financial health although that may not be their most important consideration.

Year	Life/Health Insurer Insolvencies
1991	25
1992	12
1993	11
1994	8
1995	2
1996	4
1997	5
1998	6
1999	11
2000	10
2001	3
2002	2

Source: NAIC

Insurance companies are well aware of the adverse selection problem that arises when an average risk charge is applied to above-average risks. That situation exists in the state guaranty fund system, and there have been many suggestions over the years on ways to fix that oversight in design. However, given the relatively small number of insurance insolvencies and the relatively low costs associated with those insolvencies (total assessments over the last 10 years are less than one percent of 2001 industry premiums), there has been no move yet to institute risk-based pricing of the solvency guarantee.

Similar perverse incentives existed in the guaranty fund system for U.S. banks and savings and loans twenty years ago, and those perverse incentives exacerbated the solvency problems for banking institutions that characterized the 1980s. Until a similar wave of insolvency problems strikes the insurance industry, though, insurance regulators will continue to follow the status quo as the least-cost alternative. Only time will tell if that strategy is optimal, but to date it appears to be optimal from a cost-benefit standpoint.

## Summary and Conclusions

Insurance regulation is a balancing act. Regulators must balance the costs of solvency monitoring against the costs of solvency prevention and the costs of funding insurer failures to arrive at the least-cost solution. The approach used by regulators in the U.S. is increasingly geared towards evaluating management systems rather than management outcomes. After all, the insurance company managers were the persons hired to run the firm. The regulator acting as overseer is more effective than the regulator acting as partner.