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Questions and Answers

Risk-Based Capital Requirements for Property/Casualty Insurance Companies

Q: What is the purpose of a capital and surplus requirement for insurers?

A: A capital and surplus requirement is designed to provide an adequate cushion for unexpected increases in liabilities, unexpected decreases in asset values, inadequate rates, cash flow timing problems, and catastrophes.

Q: Do states now have capital requirements for insurers?

A: Yes. State laws generally require insurers to maintain minimum levels of capital and surplus. Historically, insurers' capital and surplus requirements have been established by law at a fixed amount for each major line of insurance. For example, now, a state might have a $1,000,000 minimum capital standard for all companies in the state that write property/casualty insurance, regardless of the size of the company or the differing degrees of risk to which different companies are exposed.

Q: What are the limitations of fixed capital standards?

A: Fixed capital requirements are unrelated to the risk posed by a particular insurer's business practices. As a result, they are too low for many insurers, particularly those that engage in business practices that pose a relatively high risk for consumers. Furthermore, they often provide an insufficient basis for timely regulatory action involving inadequately capitalized insurers.

Q: What is a risk-based capital requirement?

A: When a law requires that the minimum level of required capital be maintained with reference to the specific risks faced by institutions, it is known as a risk-based capital requirement.

Q: Why are state insurance regulators changing to a risk-based capital system for insurers?

A: In recent years insurers' business practices — particularly as they relate to exposure to risk — have become more diverse. While some insurers remain conservative in both their investments and their underwriting practices, others have become less conservative. Companies that assume a more aggressive, risk-taking approach must assure that their consumers are protected from the financial hazards created by that risk-taking through the establishment of higher capital standards.

Q: **What are the objectives of a risk-based capital requirement?**

A: A risk-based capital requirement establishes a standard of capital adequacy that is related to risk. Furthermore, it raises the safety net to protect consumers from the potential for capital inadequacy of insurers. Finally, such a requirement would provide insurance regulators with the regulatory authority to take action when a company's actual capital falls below the risk-based capital standard.

Q: **What process has the NAIC gone through to develop risk-based capital requirements?**

A: In 1990, the NAIC decided that risk-based capital requirements were superior to fixed standards and established two working groups to develop such standards. One group was charged with the development of the standards for life and health insurers, while the other group was charged with doing the same for property and casualty companies.

Since that time, the property/casualty working group has sought wide input from insurance regulators, experts, academics, industry associations and insurers. Additionally, the NAIC has conducted extensive research and testing designed to help develop the formula, evaluate the reasonableness of the formula results for insurers, assess the industrywide impact of the formula, and refine the formula. The testing has involved industry and company results, the allocation of risk-based capital charges by risk, individual insurer "case analyses," comparisons with rating agency results and results from the NAIC's Insurance Regulatory Information System (IRIS), a sensitivity analysis, a failed insurer analysis, simulation and scenario testing, and special surveys of insurer data.

Q: **What types of risks will be factored into a company's risk-based capital requirement?**

A: Under the present version of the formula, four types of risk — asset risk, underwriting risk, credit risk and off-balance sheet risk — go into the calculation of a property/casualty insurer's risk-based capital requirement.

Q: **What is an asset risk?**

A: Asset risk is the risk of asset default for fixed assets and loss in market value for equity assets. In other words, asset risk is the risk that a long-term mortgage or bond held by an insurer may go into default, or that the value of a real estate property will fall.

Q: **How did the working group derive the factors for asset risk?**

A: The formulas developed by the Life Risk-Based Capital Working Group were used as a starting point. Adjustments to those factors were made based upon the differences in valuation reporting for property/casualty insurers as well as other distinctions.

Q: **How is the asset risk calculated?**

A: The formula establishes a risk-based capital level for each of a number of asset categories. For example, there are six categories of bonds, reflecting the differing levels of risk posed by different quality obligations. The reported value of the assets in each asset category is multiplied by a risk factor that reflects the asset category's relative risk. For example, a bond rated NAIC 3 (the equivalent of a BB rating by Standard and Poor's) has a risk factor of 0.02, twice the risk factor of a less risky bond rated NAIC 2 (the equivalent of a BBB bond). Additionally, the asset portion of risk-based capital is increased in the event of high concentrations in single exposures.

Q: **What is the credit risk?**

A: Credit risk is the risk of losses from unrecoverable reinsurance and the inability of insurers to collect agents' balances and other receivables.

Q: **How is the credit risk calculated?**

A: A factor of 10 percent is charged for reinsurance recoverables from non-affiliated reinsurers and affiliated non-U.S. reinsurers, less the reinsurance penalty already taken on the annual statement under the so-called "90-day rule." Miscellaneous receivables require a 5 percent capital charge.

Q: **What is the underwriting risk?**

A: Underwriting risk is the risk of errors in pricing and reserves.

Q: **How is the underwriting risk calculated?**

A: The factors are based partially on the industry's worst accident year loss reserve development and accident year loss ratio over a 10-year period. The industry worst-case factors are modified to limit the disparities between lines of insurance. Furthermore, the factors are adjusted for individual company experience and the time value of money.

Q: **What are the off-balance sheet risks?**

A: The primary off-balance sheet risk is the risk created by excessive growth. Rapidly growing companies have a greater propensity to encounter financial difficulty.

Q: **How is growth risk calculated?**

A: The growth risk-based capital formula uses an average growth in gross premiums written and reserves over the previous three years as a baseline. Insurers with growth exceeding 10 percent receive a charge to premiums and reserves.

Q: **Will the results of the risk-based capital formula calculations be made public?**

A: Yes, both the calculation of each company's risk-based capital requirement and its total adjusted capital will be reported on the Annual Statement filed by the company. However, the NAIC has cautioned that the formula has not been designed to rate or rank adequately capitalized companies and should not be used for that purpose.

Q: **Once a company has calculated its risk-based capital requirement and has reported it on the annual statement, what does the regulator do with that information?**

A: The regulator compares the company's total adjusted capital against the risk-based capital requirement to determine if regulatory action is called for. That question is answered by the Risk-Based Capital for Insurers Model Act.

Q: **What does the model law do that is not accomplished by the formula itself?**

A: The formula provides a mechanism for the calculation of an insurance company's Authorized Control Level Risk-Based Capital and its total adjusted capital. The model law sets forth the points at which a commissioner is authorized and expected to take regulatory action.

Q: **What are the various levels of risk-based capital established by the model law?**

A: The first level is known as the Company Action Level RBC, which is set at twice the Authorized Control Level RBC. The second level is the Regulatory Action Level RBC, at 1.5 times the Authorized Control Level RBC. The third is the Authorized Control Level RBC, and the fourth is the Mandatory Control Level RBC, set at 70 percent of the Authorized Control Level RBC. (See table)

Risk-Based Capital Levels	
Name of RBC Level	**Percentage of Authorized Control Level RBC**
Company Action Level RBC	200 Percent
Regulatory Action Level RBC	150 Percent
Authorized Control Level RBC	100 Percent
Mandatory Control Level RBC	70 Percent

Q: **What happens when a company's total adjusted capital falls below the Company Action Level RBC?**

A: If a company files a risk-based capital report (RBC report) which indicates that, while the total adjusted capital is higher than the Regulatory Action Level RBC, it is lower than the Company Action Level RBC, the insurer must submit to the insurance commissioner a comprehensive financial plan. That plan must identify the conditions in the insurer that contribute to the company's financial condition, contain proposals to correct the financial problems of the company, and provide projections of the company's financial condition, both with and without the proposed corrections. The plan must also list the key assumptions underlying the projections, and identify the quality of, and problems associated with, the insurer's business.

Q: **What if the company's total adjusted capital falls below the Regulatory Action Level RBC?**

A: If a company's capital falls between the Regulatory Action Level RBC and the Authorized Control Level RBC, or if the company fails to file an RBC plan when required, the Commissioner shall perform such examination or analysis as he or she deems necessary of the insurer's business and operations and issue any appropriate corrective orders to address the company's financial problems.

Q: **What happens if the company's total adjusted capital falls below the Authorized Control Level RBC?**

A: In addition to those actions available to the Commissioner for less serious financial problems, the Commissioner may place the insurer under regulatory control.

Q: **What if the company's total adjusted capital falls below the Mandatory Control Level RBC? What happens then?**

A: In that case, the Commissioner will be required to place the insurer under regulatory control

Q: **When will the risk-based capital requirements for property/casualty insurers become effective?**

A: The risk-based capital formula will take effect with the Annual Statement for the calendar year ending December 31, 1994, which will be filed by insurers in the spring of 1995. The model law prescribing regulatory actions accompanying the results of the formula will take effect on a state-by-state basis upon each state's adoption of the law.

Q: **Will the Model Act be made a part of the Financial Regulation Standards of the NAIC and, therefore, be required for certification by the NAIC?**

A: That has yet to be formally determined by the NAIC. The NAIC added the Life Risk Based Capital Model Act to the standards in the fall of 1993 and will not take up consideration of the addition of the property/casualty amendments to the standards until 1994 at the earliest.

NAIC

National Association of Insurance Commissioners

Risk-Based Capital Requirements for Insurers

A New Solvency Tool for Consumer Protection

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The Calculation of the Risk-Based Capital Requirement

Introduction

State laws generally require insurers to maintain minimum levels of capital or surplus. Historically, state laws have established insurers' capital and surplus requirements at a fixed amount for each major line of insurance. For example, a state might have a $1,000,000 minimum capital standard for all companies in the state that write life insurance, regardless or the size of the company or of the differing degrees of risk to which different companies are exposed.

In recent years insurers' business practices—particularly as they relate to exposure to risk—have become more diverse. While some insurers remain conservative in both their investments and their underwriting practices, others have become less conservative. These less conservative practices by some insurers ran headlong into the economic troubles of the late 1980s and created an increase in the failure of insurance companies, to the detriment of policyholders and taxpayers.

In 1990, the NAIC examined both the existing capital requirements and this growing diversity in insurer business practices and concluded that consumers should be protected by subjecting companies that assume a more aggressive, risk-taking approach to higher capital requirements. This conclusion led to the formation of two working groups charged with the development of risk-based capital requirements for insurers. After extensive research and expert advice, the NAIC adopted life/health risk-based capital requirements in December 1992 and adopted property/casualty risk-based capital requirements in December 1993.

It is helpful to think of each of the NAIC's risk-based capital proposals as consisting of two parts:

- The formula and reporting requirement, under which each insurer calculates and reports to regulators its capital requirement and total adjusted capital.

There are two formulas, one for life/health companies and one for property/casualty companies.

- The Risk-Based Capital (RBC) for Insurers Model Act, which establishes duties for both the company and insurance regulators based upon the figures generated by the formulas. There is one model law that covers both life/health and property/casualty risk-based capital requirements.

This booklet describes the life/health formula, the property/casualty formula, and the RBC for Insurers Model Act.

The Life/Health Formula

The Calculation of the Risk-Based Capital Requirement

Four types of risk—asset risk, insurance risk, interest risk and business risk—go into the calculation of a life insurer's risk-based capital requirement.

Asset risk is the risk of asset default for debt assets and loss in market value for equity assets. In other words, asset risk is the risk that a long-term mortgage or bond held by an insurer may go into default, or that the value of a real estate property will fall.

The formula establishes a risk-based capital charge for each of a number of asset categories. For example, there are six categories of bonds, reflecting the differing levels of risk posed by different quality obligations. The reported value of the assets in each asset category is multiplied by a risk factor that reflects the asset category's relative risk. Bond factors are adjusted up or down based on the number of issuers. Additionally, the asset portion of the risk-based capital requirement is increased if an insurer's assets are highly concentrated in single exposures.

Insurance risk is the risk that claims might exceed expectations, both from random fluctuations and from not making adequate provision in the pricing for unexpected risks. The factors chosen represent surplus needed to provide for excess claims over expected. For example, the risk factor for life insurance risk is based upon the net amount at risk. Companies with larger net amounts at risk have lower factors since the larger the amount, the greater its predictability.

The interest rate risk is the risk of losses due to changes in interest rate levels. The impact of interest rate changes is greatest on those products where the guarantees are most in favor of the policyholders and where the policyholder is most likely to be responsive to changes in interest rates by withdrawing funds from the insurer

Therefore, risk categories vary by the withdrawal provision (i.e., whether there is a substantial penalty for withdrawal).

Like all companies, insurers face a wide range of general business risks. However, the characteristics of these risks are difficult to quantify in a general way for all companies. One risk that is somewhat quantifiable, and therefore serves as the basis for the calculation of general business risk, is the risk that, because of the failure of other insurers, the insurer in question would be charged a guaranty fund assessment. Under the current system of guaranty associations, a financial crisis in the industry would likely trigger payments by the surviving insurers through the guaranty funds. A company's exposure to this risk is based upon the total volume of business written by the insurer in a given year, as measured by premium income.

These four types of risks are combined in a formula that produces the company's Authorized Control Level Risk-Based Capital, which then serves as a standard for regulatory action. The purpose of the formula is to estimate the capital levels required to deal with losses that may be caused by a catastrophic financial event. However, because it is unlikely (indeed, impossible) that all such possible losses will occur at once, a "covariance adjustment" is made to the formula. The adjustment operates on the assumption that asset risk and interest rate risk are correlated, while insurance risk is independent of the other two.

While risk-based capital requirements are intended to be used only as a regulatory tool, each company's Authorized Control Level Risk-Based Capital requirement and its Total Adjusted Capital will be reported on the annual statement filed by the company, and, therefore, will be available to insurance consumers. However, the NAIC has cautioned that the formula has not been designed to rate or rank adequately capitalized companies and should not be used for that purpose.

The Calculation of Total Adjusted Capital

Regulators will use a company's risk-based capital requirement as a baseline standard against which to compare that company's Total Adjusted Capital. The Total Adjusted Capital is the sum of a company's capital and surplus, Asset Valuation Reserve[1], voluntary investment reserves, 50 percent of its dividend liability, and its subsidiary company amounts.[2]

[1]The Asset Valuation Reserve is described in greater detail in the NAIC publication. *The Valuation of Insurer Assets and the NAIC Securities Valuation Office*

[2] The subsidiary company amounts are the sum of the subsidiaries' Asset Valuation Reserve, voluntary investment reserves, and half the dividend liability times the insurer's percent ownership.

The Property/Casualty Formula

The Calculation of the Risk-Based Capital Requirement

There are four broad types of risks included in the calculation of the property/casualty risk-based capital requirement:

1. Asset Risk—the risk of default and decline in market value of assets.
2. Credit Risk—the risk that premiums and reinsurance recoverables may not be collected.
3. Underwriting Risk—includes the risk that prices and/or reserves are not adequate.
4. Off-Balance Sheet Risk—includes excessive premium growth and potential liabilities not reported in the annual statement.

Asset Risk

The capital requirements to support the invested asset risk is based on the capital charges established by the Life Risk-Based Capital Working Group. The life/health formula factors were then adjusted due to differences in valuation reporting and other differences between life/health and property/casualty companies. The property/casualty formula requires, as does the life/health formula, an adjustment for bond diversification and asset concentration, in order to add risk-based capital for insurers with more concentrated portfolios.

Credit Risk

Credit risk is the risk of losses from unrecoverable reinsurance and other receivables, such as due and accrued income from interest; dividends from real estate; and recoverables from parents, subsidiaries, and affiliates, among others.

Underwriting Risk

Underwriting risk is primarily the risk of pricing and reserving errors. While reserves are difficult to estimate with high degrees of accuracy, the question remains as to how much capital is necessary to support any given reserve level. Because reserves for the various types of business possess rather different frequency and severity characteristics and are, therefore, not homogeneous, it is appropriate to make that determination by line of business. The approach that the NAIC adopted is to consider the calendar year reserve developments, by line of business, for the industry as a whole over the last 10 years and to base the capital charges on those developments, selecting the worst year of development as the base for the risk based capital requirement.

However, the formula makes two modifications to this deficiency factor. The first adjustment considers each individual company's reserving experience. Companies with reserve developments that are better than the industry average are given a credit in the formula while those exhibiting worse reserve developments are surcharged. The second adjustment is for the time value of money. The reserves and the capital requirement are discounted at 5% interest using payment patterns established at the Internal Revenue Service for each line of business.

The capital to support the other underwriting risk, that is, the risk that current premiums charged are not sufficient to pay future losses, is calculated in much the same way as the reserve risk. Here the formula uses the worst industrywide loss ratio over the past 10 years modified by the company's experience and again discounted for the time value of money. The resultant factor is applied to the previous years written premium. Thus, the formula establishes a capital standard that requires the industry as a whole to have sufficient capital to survive a repeat of the worse underwriting year in recent history.

The worst case scenario factors for reserves and premiums are modified to increase the RBC required for lines with relatively favorable historical experience and to lower the RBC required for lines with relatively adverse historical experience. This recognizes that particularly favorable or unfavorable historical experience will not necessarily repeat itself in the future.

Off-Balance Sheet Risk

Off-balance sheet risk is comprised of four factors: non-controlled assets, guarantees for affiliates, contingent liabilities, and premium and reserve growth risk.

Non-controlled assets are the amount of all assets not exclusively under the control of the company, or assets that have been sold or transferred subject to a put option contraction currently in force.

Guarantees for affiliates include guarantees for the benefit of an affiliate that result in a material contingent exposure of the company's assets to liability.

The property/casualty RBC working group found that rapidly growing companies have a greater propensity to encounter financial difficulty. To reflect that

additional risk, insurers with growth exceeding an average of 10% per year over the three previous years receive a charge to premiums and reserves.

Like the life/health formula, the property/casualty formula addresses the presumption that not all that could happen will happen all at once through a covariance adjustment.

The Calculation of Total Adjusted Capital

Like the life/health RBC instructions, the property/casualty RBC instructions provide for a modification to the insurer's statutory capital and surplus in the calculation of total adjusted capital, the figure that is compared with the Authorized Control Level RBC to determine appropriate regulatory action. All non-tabular discounts are to be subtracted from statutory surplus with a five-year phase-in—20% the first year, with 20% added every year after until it is 100%.

The Model Act

A state insurance regulator compares the company's total adjusted capital against the risk-based capital requirement to determine if regulatory action is called for. That question is answered by the Risk-Based Capital for Insurers Model Act. The formula provides a mechanism for the calculation of an insurance company's Authorized Control Level Risk-Based Capital and its total adjusted capital. The model law sets the points at which a commissioner is authorized and expected to take regulatory action.

The first level is known as the Company Action Level RBC, which is set at twice the Authorized Control Level RBC. The second level is the Regulatory Action Level RBC, at 1.5 times the Authorized Control Level RBC. The third is the Authorized Control Level RBC, and the fourth is the Mandatory Control Level RBC, set at 70 percent of the Authorized Control Level RBC. (See table)

Risk-Based Capital Levels

Name of RBC Level	Percentage of Authorized Control Level RBC
Company Action Level RBC	200 Percent
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Mandatory Control Level RBC	70 Percent

If a company files a risk-based capital report (RBC report) indicating that, while the total adjusted capital is higher than the Regulatory Action Level RBC, it is lower than the Company Action Level RBC, the insurer must submit to the insurance commissioner a comprehensive financial plan. That plan must identify the conditions in the insurer that contribute to the company's financial condition, contain proposals to correct the company's financial problems, and provide projections of the company's financial condition, both with and without the proposed corrections. The plan also must list the key assumptions underlying the projections and identify the quality of, and problems associated with, the insurer's business.

If the company's total adjusted capital falls between the Regulatory Action Level RBC and the Authorized Control Level RBC, or if the company fails to file an RBC plan when required, the commissioner will perform such examination or analysis as he or she deems necessary of the insurer's business and operations and issue any appropriate corrective orders to address the company's financial problems.

If the company's total adjusted capital falls below the Authorized Control Level RBC, in addition to those actions available to the commissioner for less serious financial problems, the commissioner may place the insurer under regulatory control. Finally, if the company's total adjusted capital falls below the Mandatory Control Level RBC, the commissioner will be required to place the insurer under regulatory control.

As of February 1994, five states (California, Illinois, Missouri, Nebraska and New York) have adopted the NAIC RBC model act as it applies to life/health insurers.

Conclusion

In January 1994, the NAIC established a standing task force, the Risk-Based Capital (EX4) Task Force, to evaluate and recommend appropriate refinements to capital requirements for all types of insurers. That task force will continue to research and refine the life/health and property/casualty risk-based capital systems. In addition, the task force will oversee the NAIC's next step in protecting consumers through risk-based capital standards, the development of an RBC for health organizations.

In 1993, the NAIC created the Health Organizations Risk-Based Capital Working Group. That working group is developing a separate risk-based capital formula for health insurance including traditional health insurers, health maintenance organizations (HMOs), Blue Cross/Blue Shield (BCBS) plans, and health service plans. The working group will expand the provisions in the current life/health formula to better measure risk in various health organizations.

For example, insurance companies invest extensively in marketable securities, and the risk-based capital factors are set accordingly. However, some health organizations have substantial assets in ventures—such as hospitals—that are used directly in providing services and, therefore, contribute directly to the health organization's ability to control quantity and cost of services. Also, some have suggested that health organizations transfer risk differently than do health insurers, with the former using such devices as negotiated fee schedules, budgets, and capitation rate agreements, and the latter focusing on reinsurance and stop-loss coverage.

The working group is addressing all these issues, along with many others. The NAIC's goal is to develop a seamless system of risk-based capital requirements that will be appropriate for the existing environment and accommodate future evolution as well. This should facilitate an even playing field for health insurers.

BCBS plans, HMOs, and others, while not stifling the development of innovations.

Other Related NAIC Publications

The following NAIC publications deal with issues related to solvency regulation:

Insurers' Distribution of Assets

Insurers' Long-Term Mortgage Loans and Real Estate Investments

Insurers' Medium- and Lower-Quality Bond Holdings

Issues Concerning Insurance Guaranty Funds

Profitability by Line by State

The Financial Regulation Standards and Accreditation Program of the NAIC

The Valuation of Insurer Assets and the NAIC Securities Valuation Office

Persons interested in obtaining any of these publications or a catalog of all the NAIC's publications may do so by calling the NAIC Publications Department at (816) 374-7259.

II. Insolvency Risk and Risk-Based Capital

A. Property/Casualty Insurer Insolvency Risk

From an economic perspective, an insurer is insolvent if the economic (market) value of its assets is less than the economic (discounted) value of its liabilities, i.e., if the economic value of its net worth is negative. Because shareholders have limited liability, the shortfall will result in some combination of losses to policyholders and guaranty fund assessments on other insurers.

The immediate cause of insolvency can be reductions in asset values, (for example, defaults on bond investments or reductions in the market value of investments), or increases in liabilities for claims, (for example, large natural catastrophes, such as hurricanes and earthquakes or from unexpected increases in the frequency and severity of tort claims). Economic net worth may also become negative as a result of changes in interest rates, if increases in interest rates cause the market value of assets to fall much more than the discounted value of liabilities. However, property/casualty insurers are not subject to product disintermediation as are commercial banks and some life insurance products.

The underlying causes of insurer failures include bad luck and insufficient incentives for safety. While some insolvencies will occur even with substantial incentives for safety, inadequate or misguided incentives can result in excessive risk, including deliberate under-pricing of policies to generate cash prior to insolvency. The point at which "economic" insolvency occurs cannot always be determined with precision. "Accounting" net worth may differ substantially from economic net worth, due to differences that arise from conventional accounting practices or managerial efforts to manipulate reported net worth by overstating asset values and understating liabilities. A major problem in valuing property/casualty insurer net worth is that the liability for claims is not known with certainty for some lines of insurance until long after policies are sold. Regulators that believe an insurer is near insolvency may sometimes find it difficult to meet required standards of legal proof to remove the insurer from the market.

Although studies of insurer insolvencies during the late 1960's and early 1970's identified fraud and mismanagement as the primary causes of insurer insolvencies, the situation has changed since these studies were conducted. A recent study of property/casualty insurer insolvencies over the period 1969–1990

by the A.M. Best Company (1991) identified deficient loss reserves and/or inadequate prices as the most common "cause" of insolvency (results of the report are illustrated in Table 1). The table shows that rapid growth, which can sometimes indicate inadequate prices, also has been frequently associated with failure. Less common "causes" of failures include overstated assets, fraud, failure of reinsurance, and catastrophes.[1] Although the study found that the most important problem is inadequate prices, it is not clear whether prices were inadequate at the time business was sold, as opposed to being inadequate after the fact (i.e., after unexpectedly high claims have occurred).[2] The evidence of rapid growth suggests that underpricing up front has been important in some insolvencies, as one way insurers can grow rapidly is by cutting prices.

Table 1
PRIMARY CAUSES OF PROPERTY/LIABILITY INSURER INSOLVENCIES, 1969–1990

PRIMARY CAUSES	NUMBER OF COMPANIES	PERCENT OF TOTAL
Deficient loss reserves (inadequate pricing)	86	28%
Rapid growth	64	21
Alleged fraud	30	10
Overstated assets	30	10
Significant change in business	26	9
Reinsurance failure	21	7
Catastrophe losses	17	6
Miscellaneous	28	9
Total	302	100

Source: A.M. Best Company (1991).

The A.M. Best study found that 63 percent of property/casualty insolvencies during the period 1969–1990 occurred among small insurers, 34 percent among medium insurers, and only 3 percent among larger insurers. Insolvency rates (number of failures divided by number of companies) were much higher for small and medium size insurers than for large insurers and largest among medium sized insurers. However, it would clearly be a mistake to conclude from these statistics that the solvency regulation system should focus primarily on small and medium size companies. The potential for significant insolvency costs is much higher among larger companies even though the failure frequency for this group is lower. For example, 40 percent of property/casualty guaranty fund assessments since 1969 have been generated by five failures and 80 percent by only 25 failures.

More fundamentally, insolvency risk depends on potential volatility in asset returns and claim costs and on the incentives of insurers to reduce insolvency risk by holding more capital, investing in safer assets, reducing interest rate risk, purchasing high quality reinsurance, and diversifying across lines of insurance. Because these risk management methods are costly, safer insurance generally will be more expensive than risky insurance. Apart from any regulatory monitoring, incentives for safety in turn depend on several factors including the demand for safety by policyholders, the cost and ability of policyholders to identify and monitor safe insurers, and whether insurer insolvency will result in significant costs to insurer owners and/or managers.

Potential costs to insurance company owners from insolvency include the loss of future income arising from previous investments made by the insurer in building a reputation and a book of business. The possible loss of this "franchise value" will provide a significant incentive for many insurers to avoid insolvency.[3] This is true even if policyholders are unable to readily identify and monitor safe insurers -- or if policyholders are less concerned with safety because of guaranty fund protection. However, large reductions in net worth due to factors such as large, unexpected increases in claim costs can substantially increase the risk of insolvency and alter insurer incentives. Beyond some point, reductions in net worth may lead an insurer to "go for broke," i.e., to pursue very high risk strategies with the hope of delaying or preventing insolvency.

Costly monitoring of insolvency risk by policyholders, reduced incentives for policyholder monitoring because of guaranty funds, and the possibility of "go for broke" behavior provide the major rationales for regulatory monitoring of

solvency risk and other forms of solvency regulation. Regulation can reduce the cost of insolvency by monitoring insurers, by constraining excessively risky behavior, and by closing down as promptly as possible companies that have become insolvent.

The objective of solvency regulation should be to duplicate as closely as possible the outcome of a competitive market in which all parties have efficient access to all of the information needed for rational decisions. This means that solvency regulation should not attempt to prevent all insurer failures. Market exit through failure and voluntary withdrawal is a normal outcome in a competitive market. However, failed firms should not be permitted to place a significant burden on healthy firms and policyholders through guaranty fund assessments and delayed or incomplete payment of claims. Thus, the objective should be to facilitate where possible the rehabilitation of weak insurers and to bring about the orderly exit of unsuccessful companies as closely as possible to the point where the economic value of assets falls below the economic value of liabilities.

B. Theoretical Basis for Risk-Based Capital Requirements

In theory, risk-based capital refers to a system in which insurers would be required to meet or exceed a minimum capital requirement tied to specific characteristics of the company that are presumably related to the risk of insolvency. Under a risk-based capital system, if an insurer's reported capital (surplus) failed to exceed its required risk-based capital (or some percentage of risk-based capital), it would be subject to regulatory action. Possible regulatory responses that could be specified in a risk-based capital system might include increased monitoring, restrictions on growth, requiring the insurer to add more capital to avoid being placed in receivership, and/or placing the insurer in receivership or conservatorship. A well-designed risk-based capital system should help regulators identify financially weak companies while there is still time for rehabilitation and remove unsalvageable companies from the market before they incur significant deficits that would place a burden on healthy insurers. Such a system should also motivate insurers which otherwise would have inadequate incentives for safety to hold more capital and otherwise manage their operations to reduce their risk of insolvency in order to avoid increased attention or intervention from regulators.

Risk-based capital would differ fundamentally from the current system of minimum dollar capital (and surplus) requirements, which are identical for all insurers (or broad classes of insurers, such as stocks or mutuals). Existing minimum

capital requirements typically are less than or equal to $2 million. These requirements probably deter entry by some insurers that would otherwise be inadequately capitalized and likely to fail and facilitate regulatory action against small insurers that are experiencing financial difficulty. Existing minimum capital requirements, however, have little or no impact on insurers beyond some very small size. An advantage of this feature is that they do not constrain behavior and increase costs (and thus prices) for financially sound insurers. A disadvantage is that little or no guidance is provided to regulators about the adequacy of capital for all but the smallest insurers. Existing requirements also are of little value to regulators in providing a legal basis for intervening in the operations of all but the smallest insurers. In addition, a weak insurer's reported (statutory) capital may not fall below the legal minimum until the market value of its assets fall far below its true liabilities. Of course, regulators have already developed a variety of tools to monitor insurer capital relative to risk, including the Insurance Regulatory Information System (IRIS), less formal analyses of insurer premiums and liabilities relative to capital, and the assessments developed by private rating agencies.

A formal risk-based capital system offers several possible advantages compared to the existing systems of minimum capital requirements and regulatory monitoring of capital relative to risk. These advantages have the potential to achieve an efficient reduction in the expected cost of insolvencies. As noted, a well-designed risk-based capital system should encourage greater safety for insurers for which market incentives for safety are inadequate. A genuinely well-designed risk-based capital system will also provide guidance and assistance to regulators. It will provide information to help identify weak companies and to facilitate regulatory intervention either before an insurer becomes insolvent or at a minimal level of deficit.

A risk-based capital system will give regulators legal authority to intervene if reported capital falls below risk-based capital requirements (or some percentage of risk-based capital). This authority will be valuable in cases where it might otherwise have been difficult for intervention to be upheld by the court system. In some instances, a risk-based capital system may force regulators to take some action rather than delay intervention due to pressure from the troubled company or the hope that things will get better without having to declare an insurer insolvent or to significantly restrict its activities.

At the same time, there are possible systems besides risk-based capital that could encourage insurer safety and facilitate regulatory monitoring and prompt regulatory attention to weak

insurers. For example, a system of financial ratio analysis in which regulatory action would be required under specified circumstances in principle could help achieve these goals.[4] This type of system could in effect create implicit capital requirements for insurers in order to avoid increased regulatory attention. The theoretical advantages of risk-based capital over a ratio based system include greater ability to reflect and aggregate the major aspects of insurer risk and the creation of an explicit linkage between insurer risk and required capital.[5]

On the other hand, risk-based capital requirements have a number of serious potential limitations. It is infeasible for a risk-based capital system to duplicate precisely the capital levels and incentives for safety that would exist in a dynamic, competitive environment in which both consumers and insurers have adequate incentives for safety. Insolvency risk depends on numerous factors that are difficult to quantify, and the insurance market is characterized by substantial diversity across insurers in types of business written, characteristics of customers, and methods of operation. It is impossible to specify the "right" amount of capital for most insurers through a formula. Unavoidable imperfections in any meaningful risk-based capital system will likely distort some insurer decisions in undesirable and unintended ways. As we discuss further below, overly stringent risk-based capital requirements would produce significant market dislocations to the detriment of many insurers and consumers. Thus, the desire to achieve the objectives of a risk based capital system must be tempered by the reality that any such system will be imperfect and that the inevitable imperfections have the potential to impose significant costs on healthy insurers.

In addition, risk-based capital requirements by themselves will do little or nothing to help regulators determine whether an insurer's reported net worth is overstated. The great difficulty in determining whether an insurer's reported losses and loss reserves are significantly understated, especially for long-tailed lines of business subject to large volatility in costs, limits the ability of risk-based capital to encourage weak insurers to hold more capital and to assist regulators. In fact, poorly designed risk-based capital requirements could increase incentives for some insurers to under-report loss reserves in order to show lower required risk-based capital, higher capital relative to required risk-based capital, or both. In general, some insurers will try to manage their required level of risk-based capital through means that do not reduce risk or increase economic net worth. Thus, risk-based capital is not a substitute for regulatory monitoring of prices, reserves, and other financial variables.

C. Goals and Objectives of Risk-Based Capital

The overall goal of risk-based capital should be to minimize the expected cost of insolvency, including both direct and indirect costs. The direct costs of insolvency include the regulatory monitoring and prevention which are ultimately borne by insurance buyers. The most important indirect costs are market dislocations and distortions caused by the inevitable inaccuracies that will be imbedded in any practical risk-based capital system. These costs encompass unintended adverse effects on insurance pricing and availability as well as penalties to owners of sound insurance companies resulting from inaccurate signals from the risk-based capital system. In other words, the potential benefits of risk-based capital must be balanced against the costs that arise because of the infeasibility of duplicating the outcome of an efficient competitive market. A well-designed risk-based capital system must achieve an appropriate balance among a number of specific objectives related to risk measurement and market responses to risk-based capital requirements.[6]

1. **The risk-based capital formula should provide incentives for weak companies to hold more capital and/or reduce their exposure to risk without significantly distorting the decisions of financially sound insurers.**

A major goal of a risk-based capital system should be to improve the incentives of insurers to reduce the expected cost of insolvency in efficient ways. Because market incentives for safety are inadequate in some cases, some insurers may pose too great a threat of insolvency. Risk-based capital should encourage insurers for which market incentives for safety are inadequate to hold more capital and/or take other actions to reduce risk. It should be emphasized that these actions generally will lead to higher premium rates for these insurers.

When attempting to affect the behavior of weak insurers, risk-based capital requirements must confront a basic tradeoff: increases in the amount of required risk-based capital may likely reduce the frequency and severity of insolvencies, but they will also lead to more and greater distortions in the decisions of financially sound companies. If risk-based capital requirements are set too low, they will have little effect on insolvencies. However, if they are set too high, they will create costs that exceed the benefits of lower insolvency costs. As we discuss further below, adverse consequences include that the price of coverage would become higher than necessary.

2. **The risk-based capital formula should reflect the major types of risk that affect insurers and how these risks differ across insurers.**

It is important that all major types of risk be reflected in the formula. To the extent possible, the types of risk incorporated in the formula should be related to the underlying theory of insurer insolvency risk and the empirical evidence on the causes of insolvencies. Subject to practical considerations, the major types of risks should be measured as accurately as possible. This will reduce the extent of undesirable distortions on decisions and make it more difficult for insurers to increase risk in ways that are not constrained by the system. It also will make it less likely that certain segments of the industry will be unfairly and inefficiently disadvantaged by application of the formula. For example, the formula should not have differential effects on stocks vs. mutuals, agency companies vs. direct writers, or small vs. large companies unless there is clear evidence of significant differences in risk between the groups that can be measured with reasonable precision.[7]

3. **The risk-based capital charges (or weights) for each major type of risk should be proportional to their impact on overall risk of insolvency.**

Differences in risk-based capital charges for the major types of risk should be consistent with their importance in explaining prior insolvencies based on both theoretical and empirical analysis. For example, since both theory and evidence suggest that a large proportion of property/casualty insurer insolvencies were associated with inadequate prices and loss reserves rather than reductions in asset values, the formula should produce results that are broadly consistent with these findings.

4. **The risk-based capital system should focus on identifying insurers that are likely to impose the highest costs of insolvency.**

Although most insurers that fail are small and insolvency frequency rates are higher among small insurers than for larger insurers, a relatively small number of insurance failures have also imposed substantial insolvency costs on the guaranty fund system. Although about 200 insurer insolvencies have resulted in guaranty fund assessments since 1969, five failures account for 40 percent of the assessments and twenty-five account for 80 percent (A.M. Best Company, 1991). Clearly, the objective of reducing total insolvency costs can best be achieved by focusing resources on the identification of those companies that

have the greatest risk of imposing high costs in the event of financial distress.

5. **The formula and/or the measurement of actual capital should reflect economic values of assets and liabilities whenever practicable.**

Net worth calculated according to either statutory or generally accepted accounting principles can differ significantly from the economic value of net worth. For example, loss reserves generally are not discounted and bonds are carried at amortized value rather than market value (or estimated market value). Ignoring potentially large differences between accounting and economic values would reduce the ability of a risk-based capital system to assist regulators and encourage greater safety for weak companies.

6. **To the extent that is possible, the risk-based capital system should discourage under-reporting of loss reserves and other forms of manipulation by insurers.**

As noted, poorly-designed risk-based capital requirements might increase incentives for insurers to under-report loss reserves. They also might be subject to other forms of manipulation by insurers through the presentation of their financial results. The formula should be designed to reflect and control these possibilities to the extent that is practically feasible.

7. **The formula should avoid complexity that is of questionable value in increasing accuracy of risk-measurement.**

Increased complexity will likely be subject to diminishing returns in increasing accuracy. Giving up potentially minor (or questionable) increases in accuracy to reduce complexity will make the system easier to explain, understand, and use. Increases in complexity will make it more difficult for insurers to discern the implications of their decisions on required risk-based capital, and it may lead some users to mistakenly believe that the system is more precise than actually is the case. Additional complexity could increase the likelihood of significant unintended consequences, because of the additional difficulty in considering all of the possible effects of risk-based capital on the market. As a practical matter the benefits and costs of any additional data reporting under a system of risk-based capital also will need to be considered carefully.

FISCAL NOTE

STATE OF ALASKA
1994 LEGISLATIVE SESSION

Bill Version: SB 342
(S) Publish Date: 3-18-94

Revision Date:
Title: Risk Based Capital For Insurers

Sponsor: Labor & Commerce Committee
Requestor:

Department Affected: Commerce and Economic Development
BRU: Insurance
Component: Operations

COMPONENT SERIAL NO. 354

Expenditures/Revenues:

OPERATING EXPENDITURES	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00
PERSONAL SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND & STRUCTURES	0	0	0	0	0	0
GRANTS, CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL EXPENDITURES	0	0	0	0	0	0
CHANGE IN REVENUES ( )	0	0	0	0	0	0
FUND SOURCE						
1002 Federal Receipts	0	0	0	0	0	0
1003 GF Match	0	0	0	0	0	0
1004 GF	0	0	0	0	0	0
1005 GF/Program Receipts	0	0	0	0	0	0
1006 GF/MHTIA	0	0	0	0	0	0
Other	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

Estimate of current year (FY 94) cost: $ 0

POSITIONS						
FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS: (Attach a separate page if necessary.)

No fiscal impact.

Changes in CSSB 342 (LRC) have no fiscal impact. This fiscal note is appropriate.

3/10/94 JPF
Date Comm Aide (initial)

Prepared by: Joan Brown, Administrative Officer
Division: Insurance

Phone: 465-2597
Date: 3/10/94

Approved by Commissioner: Paul Fuhs
Agency: Commerce and Economic Development

Date:

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