



AMERICAN ACADEMY *of* ACTUARIES

June 10, 2006

John Purple, Chair
Casualty Actuarial Task Force
National Association of Insurance Commissioners

Re: Risk-Focused Surveillance Framework

Dear Mr. Purple:

On behalf of the American Academy of Actuaries'¹ Financial Soundness/Risk Management Committee, we offer the following actuarial perspective on issues related to financial regulation of insurers. In response to your request, our committee has reviewed the new risk-focused framework designed to enhance the effectiveness of financial regulation. Herein, we present our position paper, including ideas for the enhanced role of the casualty actuary.

We are eager to receive feedback from the Casualty Actuarial Task Force (CATF). Our group is available to discuss this paper once your committee has had the chance to review it.

Sincerely,

Chuck Emma
Chair, Financial Soundness/Risk Management Committee
American Academy of Actuaries

cc: FSRM Committee
Mary Miller, CPC Chair

¹ The American Academy of Actuaries is a national organization formed in 1965 to bring together, in a single entity, actuaries of all specializations within the United States. A major purpose of the Academy is to act as a public information organization for the profession. Academy committees, task forces and work groups regularly prepare testimony and provide information to Congress and senior federal policy-makers, comment on proposed federal and state regulations, and work closely with the National Association of Insurance Commissioners and state officials on issues related to insurance, pensions and other forms of risk financing. The Academy establishes qualification standards for the actuarial profession in the United States and supports two independent boards. The Actuarial Standards Board promulgates standards of practice for the profession, and the Actuarial Board for Counseling and Discipline helps to ensure high standards of professional conduct are met. The Academy also supports the Joint Committee for the Code of Professional Conduct, which develops standards of conduct for the U.S. actuarial profession.

Introduction

The Committee on Financial Soundness/Risk Management of the American Academy of Actuaries Casualty Practice Council has reviewed the risk-focused surveillance framework developed by the Risk Assessment Working Group (RAWG) of the National Association of Insurance Commissioners (NAIC). The results of our review are organized into several sections that address many subjects relating to the financial regulation process and the actuary's role in that process.

The committee is a volunteer group of casualty actuaries who are employed by various U.S. insurance companies, state insurance departments, and consulting organizations. The committee has been charged with developing the role of the casualty actuary within this enhanced regulatory framework. This group reviewed many documents prepared by the RAWG that were published on the NAIC website. It also engaged in conversations with many key representatives of the RAWG to better understand the goals of this enhanced framework.

In the following sections, we summarize many of the critical discussion points raised by our committee, and we offer some ideas for the enhanced role of the casualty actuary within the new framework. We begin by describing the role of the actuary in financial regulation of insurance in the U.S. and in other countries. Next, we identify the skill sets an actuary may offer in accomplishing the framework's specific goals as are listed in the RAWG's publications. Further and more generally, we discuss the critical aspects of risk management concepts and practices in which the actuary can make a unique contribution. Finally, we offer in an appendix some important lessons learned from financial insolvencies of notable insurance companies.

Our conclusions reflect our belief in several broad themes:

1. Modifying the regulatory framework to promote the earlier identification of inherent risks and their associated controls is likely to bring about a more effective system of regulation.
2. Placing an emphasis on controls related to human behavior, such as corporate governance and management competence, is also likely to result in better financial regulation.
3. Utilizing the actuary to a greater degree will assist in the improved regulatory approach in several important ways, including:
 - a. Quantified analysis of the assessment and prioritization of risk factors
 - b. Ability to analyze the interrelationships among risk factors
 - c. Overall experience in analyzing insurance company operations and industry trends

We support the NAIC's efforts to improve the process of financial regulation and look forward to continuing our support in advancing that purpose.

Background

The traditional approach to the financial regulation of insurance has dealt predominantly with the review of individual accounts on financial statements. In recent years, this approach has been increasingly recognized as limited to the extent that it relies on historical data to provide insight as to the future viability of a company. Most insurance regulators recognize the need for indicators that are more prospective, rather than retrospective, in nature. Even users of the system acknowledge that, by the time problems are identified, a company's impairment often has resulted in significant economic damages. The regulatory focus on individual financial accounts also does not consider the variability and interrelationships among the accounts, nor does it consider the potentially dominant hazard posed by human behavior.

A review of recent failures and impairments in the property/casualty industry suggests that the events that lead to a company's financial deterioration typically take place well before its financial statements reveal the problems. We believe that a company's financial controls should be assessed at earlier points in time. This includes the strategic, operational, and product-pricing decisions made by its management. Therefore, the process of financial regulation may need to evolve into a process of reviewing a company's risk management practices.

A company's loss reserves are often the largest and riskiest item on its balance sheet. However, the current regulatory process for review treats this item as an independent account, which it is not. Recent public scrutiny on loss reserves and the actuary's role in establishing them is limited to a particular balance sheet item, a technique that, in most cases, serves as a lagging indicator of a company's deterioration. Industry analysts have expressed frustration at the movements on financial statements caused by changes in loss reserve estimates. However, typically, the management decisions that lead to these changes often take place many years before loss reserve deterioration is recorded.

In this paper we attempt to define for the regulator which risk areas are best suited to the unique training and capabilities of the casualty actuary. Businesses in many industries have recently discovered the value of enterprise risk management practices. For a property/casualty insurer, this means dealing with a host of factors including financial, strategic, operational, and insurance risks. Company managers are best positioned to assess these risk factors, as they presumably understand their business better than external reviewers.

Most risk management practices in business today appear to be more qualitative than quantitative in nature. Presently, it is not typical for a CFO to describe his or her prospects for future viability in terms of probabilities. Therefore, risk management exercises have not historically demanded the quantitative type of risk analyses that actuaries are known to provide. An initial risk management exercise may involve a ranking of which potential factors are the most threatening to the company. Prioritizing

risks requires quantifying them, and the regulatory actuary is well positioned to play a significant role in evaluating the company's risk assessment process.

We believe that the surveillance framework developed by the RAWG represents clear progress toward improving the effect of financial regulation by placing emphasis on management's competency and on corporate governance. Oversight of these matters should increase the speed and accuracy with which problems are identified and addressed. It also should provide a more effective means for reducing economic loss associated with insolvencies. We believe that effective enterprise risk management calls for an even broader scope of review, including strategic and operational risk. We provide a discussion of these risks, including potential problems caused by people, processes, and systems, in the final section of this paper. For a property/casualty company, this category should be understood predominantly to include actions such as under-pricing, rapid expansion, and poor risk controls in underwriting. According to many experts, poor risk management in these areas represent the largest threat to a company's solvency.

1: Current Practices of Regulatory Casualty Actuaries in the United States

The current role of regulatory casualty actuaries in the United States, although expanding, is still limited. As noted in the background section, regulatory actuaries have predominantly reviewed individual accounts on financial statements, such as loss reserves. Occasionally, this review involves Annual Statement analysis and conversations with key individuals at the company in areas such as reserving, management, underwriting, claims, etc. However, the review of areas other than loss reserves is generally limited to the scope of the individual account without a formal opinion as to its adequacy.

Regulatory actuaries, for the most part, perform their reviews in the office. A limited number of state department actuaries perform onsite reviews, depending on the circumstances. The decision to conduct an onsite review may be based on results from an internal analysis or from a financial examination. Although the majority of actuaries are not involved in the entire exam, the actuaries that do go onsite feel that this interaction enhances the analysis and may increase the likelihood that emerging problems are identified. Also, the actuaries who regularly perform onsite reviews believe that the in-person contact increases the quality and detail level of exam-related communications. The live interaction helps to enhance the actuary's understanding of the company's inner structure and the true level of actuarial involvement in the decision-making process.

Many insurance departments have some actuarial staff involved in reserving and/or pricing, as well as specialists who play some role in the review of reinsurance contracts for risk transfer. In many cases, these individuals may not be credentialed as actuaries but may be individuals hired to do actuarial work. State departments without credentialed actuaries on staff generally enter into contracts to have these types of analyses performed. Typically, the departments' reserving and pricing actuaries work in separate areas. Both financial analysts and actuaries monitor financial situations throughout the year in a variety of ways. These include reviews of quarterly statements, meetings with companies, internal analyses, and reviews of company's internal analyses.

The NAIC accreditation standards require some actuarial involvement in the financial exams. However, the type and extent of involvement varies.

In the majority of cases, consulting actuaries, rather than company employees, issue the Statement of Actuarial Opinion. Departments also hire consultants in situations in which specialized expertise, such as significant A&E exposure or medical malpractice knowledge, is needed. As noted above, in some of the smaller states, consulting actuaries perform all actuarial reviews. As in reviews by regulatory actuaries, consulting actuaries' reviews tend to focus on providing opinions about individual accounts, rather than on risks in other areas of the company.

2: Current Practices in Other Countries

Assessing risk and measuring minimum capital levels is a key concern for regulators both in and outside the United States. In this section, we will briefly describe developments in insurer solvency assessment in other countries.

International Association of Insurance Supervisors (IAIS)

The IAIS was established in 1994 and represents insurance regulators and supervisors of 180 jurisdictions. One of the goals of the IAIS is to develop standards that can be used by insurance supervisors throughout the world. They have sponsored a significant amount of research, resulting in several papers intended to represent best practices, or targets, for supervisors to work towards. An overview of their framework is available online at http://www.iaisweb.org/133_ENU_HTML.asp.

In support of this work, the International Actuarial Association (IAA) formed an Insurer Solvency Assessment Working Party to provide a structural overview for a risk-based solvency assessment system for insurance. The paper, along with two case studies that resulted from the Working Party's effort, is available at http://www.actuaries.org/LIBRARY/Papers/Global_Framework_Insurer_Solvency_Assessment-public.pdf.

The Working Party's report details the risks faced by insurers, similar to the RAWG report. The Working Party report also discusses the manner in which actuaries can assist the supervisory review process. It contemplates a system in which larger, more sophisticated insurers develop their own internal capital assessment model. Smaller companies may be subject to a standardized approach developed by the supervisory authority. This system is used in Australia for property and liability insurers.

Australia

The governmental organization responsible for regulating insurers in Australia is the Australian Prudential Regulatory Authority (APRA).

Under the Australian system, insurers are encouraged to develop an in-house capital measurement model to calculate the minimum capital requirement. An internally developed model is subject to the regulator's prior approval and subsequent review. Insurers who do not use an internally developed model must use the regulatory model known as the Prescribed Method.

The Internal Model Base (IMB) method contains both qualitative and quantitative requirements. The qualitative requirements include such items as an independent risk management unit responsible for the design and implementation of the insurer's capital measurement model. Additionally, the board and senior management must be actively involved in the risk control process, and the capital measurement model must be integrated into the day-to-day operation of the insurer.

The key quantitative measure is that the insurer's capital measurement model should calculate an amount of capital sufficient to reduce the insurer's probability of default over a one-year time horizon to 0.5% or below.

The Prescribed Method provides a series of values that the insurer applies to determine its minimum capital requirements. In this manner, the Prescribed Method is a risk factor-based model similar to the NAIC Risk Based Capital (RBC) and Canadian minimum capital requirements.

The APRA system is detailed in a series of documents available online at <http://www.apra.gov.au/General/General-Insurance-Prudential-Standards-and-Guidance-Notes.cfm>.

Canada

The governmental organization responsible for regulating insurers in Canada is the Office of the Superintendent of Financial Institutions (OSFI).

After significant testing and refinement, OSFI introduced a minimum capital test (MCT) in July 2003. The MCT uses a risk-based formula. Similar to the NAIC RBC approach, the MCT is a minimum test; insurers are expected to establish a target capital level well above the MCT. Similar to the U.S. regulatory approach, the MCT is one of several indicators that a regulator can use to assess a property and casualty insurer's financial condition. It is not used in isolation for ranking and rating property and casualty insurers.

The system is detailed at the OSFI website at <http://www.osfi-bsif.gc.ca>.

United Kingdom

The governmental organization responsible for regulating insurers in the United Kingdom (UK) is the Financial Services Authority (FSA). In 2003, the FSA proposed a new system for determining capital requirements for non-life insurers. The system is a risk factor-based model (similar to the NAIC and Canadian approaches), but it encourages insurers to develop their own capital assessment models (similar to the Australian system.)

There are a number of documents available at <http://www.fsa.gov.uk> that describe the process.

3: Proposal for Actuary's Role to Address RAWG Enhancement/Goals Listed 1-9

In its Risk-Focused Surveillance Framework², the Risk Assessment Working Group identified nine benefits derived from the use of a risk-focused surveillance process:

1. Strengthen regulatory understanding of the insurer's corporate governance function by documenting the composition of the insurer's board of directors and the executive management team as well as the quality of guidance and oversight provided by the board and management.
2. Enhance evaluation of risks through assessment of inherent risks and risk management processes regarding weaknesses of management's ability to identify, assess and manage risk.
3. Improve early identification of emerging risks at individual insurers and on a sector-wide basis.
4. Enhance effective use of regulatory resources through sharper focus on higher risk areas.
5. Increase regulatory understanding of the insurer's quality of management, the characteristics of the insurer's business and the risks it assumes.
6. Enhance the value of surveillance work and establishment of risk assessment benchmarks performed by insurers and regulators, who both have common interest in ensuring that risks are properly identified and that adequate and effective control systems are established to monitor and control risks.
7. Better formalize and document the risk assessment process via the use of the Risk Assessment Matrix (which is a tool to assist in examination planning and resource assignment).
8. Expand risk assessment to provide a more comprehensive and prospective look at an insurer's risks and identification of the insurer's current and/or prospective high-risk areas.
9. Coordinate the results of the risk-focused examination process with other financial solvency surveillance functions (i.e., establishing/updating the priority score and supervisory plan).

In order to maximize the aforementioned benefits of a risk-focused examination, casualty actuaries can assist the RAWG in the development of training and education that focuses

² National Association of Insurance Commissioners, http://www.naic.org/documents/committees_e_rawg_Clean_Adopted_Framework.pdf (last visited June 9, 2006).

on prior lessons learned. Actuaries can help address a number of the benefits as outlined below:

Benefit #1

An important factor in the regulatory actuary's understanding of the insurer's corporate governance function is his or her knowledge of the chief actuary's role in management. Important considerations include whether the chief actuary reports directly to senior management or to the board of directors. The NAIC now requires the board to acknowledge receipt of the actuarial report and to note the disclosure on risks of material adverse deviation. However, it is important to know how actuarial information is communicated to the board. Do they even know who their chief actuary is (e.g., employee, consultant, how often the appointed actuary has changed, etc.)?

Even if actuarial communication is taking place, is the board familiar enough with actuarial methodologies and terminology to make appropriate management decisions? Have the board members taken the right actions, based on the information the chief actuary provided, or did they misunderstand the actuarial analysis? Does the style or makeup of the board (e.g., sales oriented, marketing-driven, etc.) put pressure on the actuary to look at the current reserving environment through rose-colored glasses?

Another important consideration is whether the chief actuary can look at the board meeting minutes and other relevant information to determine whether risk is being adequately assessed. Does the board understand the credit risk the company faces from agents or reinsurers?

All of the above questions point to the importance of the regulatory actuary's understanding of the corporate governance culture. The board of directors must understand who its actuary is, the tools and data available to it (e.g., quality of information technology, accuracy of internal data, etc.), and the ability of its actuary to identify and assess risk to help management determine whether it is looking at the right information.

Benefit #2

An important part of the regulatory actuary's role in enhancing the evaluation of risk is understanding the chief actuary's input into identifying the categories of risk that should be examined each year. For example, has management identified the right categories of risk to focus on? If certain risks are difficult to quantify, has management at least attempted to categorize unique risks by ranking them (e.g., low, moderate, high)?

Are products being priced properly? Has the company been underwriting business using appropriate guidelines, or have they used pricing (e.g., extra credits, lower rating tiers, etc.) as a way to attract under-priced business, a practice that may lead to future solvency concerns? Are controls in place to monitor compliance with guidelines?

All of the above questions are important to remember when deciding if management has the ability to identify, assess, and manage risk effectively. As noted in the RAWG's section titled "History of risk assessment and process of conducting exams," inadequate management oversight has historically caused solvency problems. Please note that a detailed discussion of lessons learned from management oversight on prior insurance company insolvencies is discussed in an appendix to this report.

Benefits #3 and #8

Identifying emerging risks on a sector-wide basis requires a clear definition of which sector is being examined. For example, a sector could imply a geographic area, line of business (e.g., medical malpractice, homeowners, workers' compensation), or a segment within a line of business (e.g., medical malpractice segments such as dentists, physicians, hospitals, allied healthcare providers, etc.).

Identifying emerging risks also requires the chief actuary and insurer to monitor actual versus expected results throughout the year to proactively identify the insurer's current and/or future high-risk areas. An actuarial "dashboard" approach focusing on detailed diagnostics (e.g., frequency, severity, case reserve metrics, etc.) is much more likely to identify emerging issues than the use of broader, historical financial data, in which reserve analyses are performed once a year, then filed away. The regulatory actuary can be of invaluable assistance in this regard.

Benefits #4 and #5

An important part of increasing regulatory understanding while focusing resources on higher risk areas is making sure that the questions asked in Benefits 1, 2, and 3 are addressed in the appropriate order. In addition, the questions must be adjusted to reflect the unique nature of the insurer's current business model. For example, a start-up company would likely require regulatory resources to be focused on initial pricing assumptions. On the contrary, a company that has decided to run-off certain lines of business might require heavier resources focused on the reserving and claim-handling processes.

Benefit #6

Another important aspect of enhancing the value of surveillance work requires insurance industry experts to identify metrics for monitoring on a year-to-year basis to ensure emerging issues are promptly identified. Insurers and regulators using metrics must also balance the use of standard industry benchmarks (e.g., RBC, IRIS Ratios, CARMEL, etc.) with those tracked by insurance company professionals and regulators (e.g., the "bright-line indicator" for determining whether a risk of material adverse deviation should be present).

In the end, whether a test provides a range of possible warning levels or serves as a bright-line indicator, it is important that the metrics are clearly communicated so that effective control systems are established to monitor and minimize risks going forward.

4: Risk Management

In the previous section, we discussed specifically the ways in which regulatory actuaries can assist with the RAWG's identified enhancements and goals for the new surveillance framework. In this section, we discuss in greater detail how casualty actuaries in regulation can contribute to the risk management endeavor within the framework of the nine risk classifications identified in Appendix F of the Risk-Focused Surveillance Framework. For some risk classifications, casualty actuaries can assist in the identification and evaluation of risk.

Credit Risk

Casualty actuaries have not traditionally been involved in most areas of credit risk. However, actuaries could play a significant role in evaluating uncollectible amounts from reinsurers. The actuary's expertise in estimating the frequency of default and degree of severity of such incidents is a unique skill in evaluating the magnitude of the credit risk.

Market Risk

Casualty actuaries can help evaluate market risk. The Casualty Actuarial Society (CAS) has conducted research in developing basic economic engines within dynamic financial analysis and enterprise risk management models that cover the critical elements required for modeling investment performance. Developing economic capital models involves modeling volatility in investment performance.

Pricing and Underwriting Risk

Within insurance companies, actuaries are almost always responsible for pricing and are often involved in underwriting. Much of the quantitative evaluation of pricing is already being accomplished via rate filing procedures within state insurance departments.

It would be impractical to replicate the full rate review process during the risk focused surveillance process. There are simply too many coverages written by insurance companies to review all rating plans. Similarly, it would be impractical to review all, or even a significant portion, of the underwriting decisions made. However, it may be practical to evaluate pricing levels and underwriting standards on a broader basis.

Qualitative evaluations could be used to identify insurers for further testing. Qualitative considerations for pricing could include:

- Does the company rely on proprietary rates or base their rates on loss costs filed by rating bureaus?
- How often are rate levels reviewed and revised?
- Does the company have full rating plans?
- Is the company current with rating bureau filings (if applicable)?
- How are strategic decisions regarding rating plans made?
- What lines of business does the company underwrite?
- Are rating plans in place for all lines and segments?
- What are the effects of rate regulation and competition?

Companies with results that indicate high risk would then have their rating plans quantitatively evaluated on a test basis. The company's own rate study would be evaluated by a regulatory actuary. The regulatory actuary would then comment on the adequacy of the rates.

The pricing implicit in rating plans is only part of the final premium collected by the insurer. Underwriting decisions also play a significant role. A qualitative review of underwriting practices would be valuable. Considerations would include:

- Do all lines, segments, and programs have complete underwriting guides?
- How often are underwriting guides evaluated and revised?
- How does the company ensure compliance with underwriting guides?
- Are underwriting authority levels clearly stated?
- Is there a rate monitoring process?
- Is a technically correct price recorded? Are deviations from this price monitored?
- What lines of business, geographies, and programs does the company underwrite?
- Does the company retain and exercise underwriting authority on all its business?

Reserving Risk

The practice of quantitative evaluation of reserve adequacy is well established. Casualty actuaries are uniquely qualified to perform this evaluation. Each company appoints an actuary to provide a Statement of Actuarial Opinion. Further, regulators employ or retain actuaries to evaluate the reserve adequacy of the companies they examine. Combined, these analyses help ensure fairly stated reserves. Insurance Regulatory Information System (IRIS) Tests on reserves provide further information but are mainly limited only to historical financial data.

In recent years, the disclosure requirements of the appointed actuary have grown significantly. There has been increased scrutiny of reserves from new, external sources. New statutory requirements ask actuaries to state their opinions regarding risks of deviation from the carried reserves and allow for comment on a range of reasonable estimates. Further, it is increasingly common actuarial practice to assign percentiles or confidence levels to various reserve estimates. These developments make it possible to

move beyond the “reasonable or not” decision to a more complete evaluation of the risk present in the reserves.

As required by Sarbanes-Oxley, Section 404, insurance companies’ senior management now must become more familiar with the process – not merely the result – of establishing reserves. In keeping with the expanded, risk-focused approach to examinations, actuaries can help by qualitatively evaluating the reserving process at insurance companies. Key qualitative factors would include:

- How often are full reserve analyses performed?
- Is there a monitoring system in place for interim reviews, and, if so, what does that system entail?
- Does the company book to the point estimate, or is there a monitored gap?
- How is the data segmented for the reserve study?
- Are separate analyses conducted for certain unique types of losses (e.g., construction defects, class actions, catastrophes, environmental)?
- How is the data segmented for the reserve study?
- What is management’s influence on the booked reserve?
- Is the opinion signed by a company actuary or a consultant?
- Have there been changes in the appointed actuary in recent years, and, if so, how often have such changes occurred?

These qualitative factors could influence the final assessment of the risk present in the reserves.

Liquidity Risk

Actuaries have performed work on asset-liability matching. Economic capital analyses result in the derivation of quantitative estimates for risk inherent in asset-liability matching. This type of work would need to be expanded to adequately address liquidity risk. Qualitative factors to consider would include:

- What types of losses could lead to liquidity issues?
- What limits, deductibles, and reinsurance are in place to mitigate the risk?
- Are there any individual assets that represent a significant portion of the total?
- Are assets held traded in public markets with large numbers of buyers and sellers?
- Does the company have a history of liquidity problems?

Similar to the value actuaries can add in the area of credit risk, the actuary’s skillful analysis of the expected costs of these events uniquely position him to fulfill this need.

Operational Risk

Operational risk includes a broad array of items. Many of these items do not have explicit entries on financial statements, but they are crucial in understanding the risk profile of an insurer. Furthermore, many actuaries already have access to datasets (i.e., average outstanding claim severity triangles) that can offer insight into the dynamics of these functions. Actuaries can help evaluate many areas, four of which we identify here.

The first area is information technology. Actuaries can help identify the quantity and quality of the data available for pricing, underwriting, and reserving decisions.

- Are records available on a secure database or stored on personal computers?
- What data elements are captured?
- Is it possible to create development triangles from the database?
- Who has access to the database?
- How often is data loaded into the database?
- How often is technology updated (new servers, new software, etc.)?
- Are spreadsheets and software “home grown” or purchased from an outside vendor? If “home grown,” what controls are in place to update formulas?

The second area is the claims function. Actuaries can help to identify and measure changes in claims handling practice. Some key measures to consider include:

- Average case reserving levels over time
- Closure rates or disposal rates of claims
- Development patterns for claims reporting, paid loss, and incurred loss
- Effects of report and settlement lags on claim severity

Changes in any of these measurable quantities could indicate potential risk items.

The third area is reinsurance. Recently, many contracts have faced challenges to the existence of risk transfer. Such challenges have given many actuaries opportunities in which their analytical skills have been critical. Often, such determinations have relied on financial modeling and computer simulations. Casualty actuaries can also help by using modeling to determine whether the reinsurance program is efficient with respect to external risk/return opportunities. Actuaries model the underlying losses to check on the influence of the reinsurance.

- What is the chance that the reinsurance layer will be reached?
- What will the reinsurance pay?
- What happens if the reinsurance limit is exhausted?
- What is the expected profitability to the cedant and reinsurer?

The final area is capital adequacy. Casualty actuaries are actively trying to answer the question, “How much capital is needed?” RBC is one way to answer this question. It may be possible to address capital adequacy through refinements of RBC. Rating agencies have also developed models for evaluating capital adequacy. Perhaps a similar model could be developed to specifically serve the needs of regulators.

Beyond developing independent estimates of required capital for insurance companies, regulators could evaluate qualitative issues, including:

- Does the company analyze required capital?
- How has capital changed in recent quarters or years?

Legal Risk

Part of the pricing, underwriting, claims, and reinsurance (risk transfer) reviews discussed above relate to legal risk. Casualty actuaries could complement the review of legal risk through these other reviews.

Strategic Risk

Casualty actuaries are often involved in developing strategy and business plans for insurance companies. If business plans can be requested as part of the financial examination process, then actuaries can help evaluate the reasonableness of such plans. For example, actuaries can play an important role in answering the basic question of how much surplus is needed to support a new operation.

Another aspect of strategic risk to consider is the company’s approach to decisions. How do they balance “gut-feel” with quantitative measures in making decisions? Who makes the decisions? Are actuaries active in the decision making process?

Reputation Risk

Casualty actuaries are not often active in evaluating reputation risk. However, one key element of reputation is the insurer’s rating from independent rating agencies. That element is crucial to some companies’ operations. In some lines of business and market segments, customers are sensitive to insurers’ ratings. Many of these ratings are quantifiable and would be well served by an actuary’s skills. More basically, though, an actuary’s experience in identifying high-risk areas can be of great value to some insurance companies.

5: Conclusion

Our conclusions reflect several broad themes about the manner in which the structure of financial regulation can be improved. First, the regulatory system would be enhanced by modifications designed to promote the earlier identification of inherent risks and their associated controls. Additionally, better financial regulation can be achieved with greater emphasis on controls related to human behavior, such as corporate governance and management competence. Finally, enlarging the role of the actuary will significantly improve the regulatory system. Actuaries can provide quantified analysis of the assessment and prioritization of risk factors. Actuaries can analyze the interrelationships among risk factors, and actuaries can provide overall experience in analyzing insurance company operations and industry trends.

We support the NAIC's goal of improving the financial regulation process and look forward to continuing to advance that effort.

Appendix: Lessons Learned From Prior Insolvencies

Approximately three hundred and forty property and casualty insurers have become insolvent over the past 20 years. A study of these insolvencies may provide lessons to those currently responsible for assessing the financial strength of insurance companies, including both insurance department financial examiners and independent auditors. By understanding the forces that drove these insurers to insolvency, current procedures and processes can be modified to provide a better system to warn of the potential for impending problems.

Insurer insolvencies have been a focus of analysis on numerous occasions in the past. One of the more high profile analyses was “Failed Promises – Insurance Company Insolvencies,” (February 1990)³ as completed by the Subcommittee on Oversight and Investigations of the House of Representatives Committee on Energy and Commerce. Representative John Dingell chaired the subcommittee. The report cited six key weaknesses in the system of solvency regulation in place at that time, many of which remain relevant today:

- Delegated management authority – Many insurers delegated their “most fundamental responsibilities to third parties who may have conflicting interests or inadequate abilities” through “excessive reliance on the judgments of managing general agents, brokers, and other companies.”
- Holding companies and affiliates – Insurers “can be too easily overleveraged and milked of their liquid assets by affiliated companies.”
- Reinsurance – Purchasing reinsurance from dependable reinsurers was described as “an unfettered exercise of discretion by insurance company managers, who are frequently dealing with unregulated entities in a vacuum of solid factual information. Nobody seems to know for sure where the insurance chain goes or whether its links are all sound.”
- Unreliable information – The data used by regulators to measure the solvency of an insurer was described as “simply unreliable as a basis for accurately determining an insurance company’s financial condition.”
- Insufficient regulation – Solvency regulation, according to the report “suffers from inadequate resources, lack of coordination, infrequent regulatory examination, poor information and communications, and uneven implementation.”
- Enforcement – The report stated that the system “devotes insufficient efforts to investigating the causes of insurance company insolvencies, and punishing the persons who are responsible. Both administrative actions and criminal prosecutions seem hampered by resource deficiencies, procedural and jurisdictional problems, limited penalties, and unwillingness to pursue wrongdoers.”

³ *P&C Perspectives* (<https://www.captive.com/service/milliman/pdf/PCPfall2004.pdf>) (last visited on June 9, 2006).

While some of these weaknesses may still be present, others appear to have been addressed. More emphasis has been placed on early intervention. In addition, more and better data is typically but not always available with which one can assess the financial strength of an insurer. Nonetheless, some of these weaknesses still exist, and new weaknesses have developed, that increase the risk of insurer insolvencies.

Insolvencies arise from numerous causes. In many instances, there is more than one cause of the insolvency. Their causes include the following:

- **Inadequate Rates**

This is widely believed to be among the most significant factors contributing to insurer insolvency. However, inadequacy of premium rates is often related to other company risk problems, for example, growth in lines and areas in which the company has little to no competency. The cause of the inadequate rates may be related to optimistic estimates of ultimate losses for the policy year for which prices are being determined. This is generally due to optimistic estimates of ultimate losses on prior policy years, which, in turn, is linked to insufficient loss reserves. The optimistic estimate of ultimate losses for the upcoming policy year may also be attributed to an insurer overriding reasonably accurate estimates of ultimate losses with an overly optimistic assessment of the impact of improvements in the insurance environment. Such changes could include claims handling, reunderwriting, court precedents, and other factors, both internal and external to the insurer. Alternatively, inadequate rates may be due to excessive expenses or insufficient investment income, although these causes generally do not result in insurer insolvency.

More recent examples of insurers that became insolvent principally because of inadequate rates include the following:

- **Reliance Insurance Company** – This was a large writer of numerous coverages with a heavy emphasis on workers' compensation. Reliance ceased writing all business in June 2000 and was ordered into rehabilitation in May 2001.⁴ Inadequacy in rates is one of numerous issues that drove Reliance into insolvency.

The 1998 statutory annual statement showed \$1.7 billion of surplus, the highest in the company's history.⁵ The 1999 statutory annual statement showed \$1.2 billion of surplus, which was 24% lower than the 1998 surplus.⁶ This reduced surplus also indicated that Reliance was at "Company Action Level" of the Risk Based Capital calculation.

There were several contributing factors to the decrease in surplus, including inadequate rate and pricing levels. Reliance's written premium grew in excess of 10% per year in the late 1990s, a time characterized by aggressive pricing. This 10% growth indicated exposure growth in excess of 10%. The Pennsylvania

⁴ Reliance Insurance (www.relianceinsurance.com) (last visited on June 9, 2006); Pennsylvania Insurance Department (<http://www.ins.state.pa.us/>) (last visited on June 9, 2006).

⁵ Pennsylvania Insurance Department (<http://www.ins.state.pa.us/ins/cwp/view.asp?A=1285&Q=527817>) (last visited on June 9, 2006).

⁶ *CFO Magazine* (<http://www.cfo.com/article.cfm/3008886?f=related>) (last visited on June 9, 2006).

Insurance Department (PID) also cited larger and more frequent claims in certain types of high-risk business, requiring an increase in loss reserves and, therefore, ultimate loss estimates. Further, Reliance had significant reinsurance through Unicover, which was never fully recovered.⁷

- **California Workers' Compensation Industry** – The California workers' compensation industry incurred significant losses during the late 1990s. The principle cause was the implementation of open rating, effective January 1, 1995, which allowed insurers to determine their own rate level.⁸ The result was a reduction in rate level of about 41% from policy year 1993 to policy year 1995, as estimated by the Workers' Compensation Rating Bureau of California (WCIRB)⁹. The declining rates during this period were implemented just as medical loss trends began accelerating to double-digit levels. As a result, ultimate loss ratios as estimated by the WCIRB increased from 60% in 1994, prior to the implementation of open rating, to between 100% and 135% for the six accident years from 1996 through 2001, after open rating went into effect.¹⁰ Insurers that became either insolvent or impaired include Superior National Insurance Company, Business Insurance Group¹¹, Paula Insurance Company¹², HIH Insurance Company, and Fremont Insurance Group.
- **Texas Workers' Compensation Industry** – During the 1980s, the Texas workers' compensation industry was characterized by high loss levels and high and increasing levels of loss development.¹³ A major cause of these difficulties was the process of adjudicating disputed claims. If a claimant was not satisfied with the outcome of the claims hearing, he could request a trial, whereby any evidence gathered through the administrative hearing was not admissible in court. This process led to a high level of attorney involvement, unanticipated increases in cost, and high and increasing loss development factors at late points of maturity.

Senate Bill 1 was passed in Texas in 1989.¹⁴ Texas Employers Insurance and Employers Casualty Company were the two largest writers of workers' compensation coverage in Texas during the 1980s. These two insurers were

⁷ Edgar Online (<http://sec.edgar-online.com/2001/05/15/0000897101-01-500306/Section7.asp>) (last visited on June 9, 2006).

⁸ California Commission on Health and Safety and Workers' Compensation (<http://www.dir.ca.gov/CHSWC/StateInsuranceIndustry2002/Stateinsuranceindustry042002.html>) (last visited on June 9, 2006).

⁹ Workers' Compensation Rating Bureau of California (<http://wcirbonline.org/index.asp>) (last visited on June 9, 2006).

¹⁰ <http://www.dir.ca.gov/CHSWC/StateInsuranceIndustry2002/Stateinsuranceindustry042002.html> (last visited on June 9, 2006).

¹¹ Conservation and Liquidation Office (<http://www.caclo.org/snicil/>) (last visited on June 9, 2006).

¹² *Insurance Journal* (<http://www.insurancejournal.com/magazines/west/2002/03/25/features/18859.htm>) (last visited on June 9, 2006).

¹³ Texas Department of Insurance (<http://www.tdi.state.tx.us/wc/regulation/roc/facility.html>) (last visited on June 9, 2006).

¹⁴ Texas Department of Insurance (<http://www.tdi.state.tx.us/wc/information/aboutwc.html>) (last visited on June 9, 2006).

declared insolvent in 1991¹⁵ and 1994¹⁶, respectively. The principal cause of the insolvencies was the unanticipated adverse loss development of loss reserves, which produced loss ratios well in excess of profitable levels.

- **The Mission Insurance Companies** – These companies were large writers of workers’ compensation coverage and a variety of other coverages, including reinsurance.¹⁷ According to the Insurance Journal, Mission became insolvent because they wrote unprofitable business.¹⁸ Mission incurred severe and long-term losses, including a number of large asbestos-related claims and other environmental pollution claims. In addition, Mission’s reinsurers failed to honor their financial obligations. At the time of its failure in 1987, Mission was the largest property and casualty insurance insolvency in the country, with policies written in all 50 states.

- **Inadequate Loss Reserves**

Inadequate loss reserves are frequently cited as a significant cause of insurer insolvency. The underlying cause of inadequate reserves is also optimistic estimates of ultimate losses. Therefore, this factor is closely related to rate inadequacy. Insurers often survive inadequate loss reserves as long as the premium collected is sufficient to absorb the incurred losses, regardless of when the losses are recorded. Inadequate loss reserves imply that the ultimate losses have not been recorded in a timely fashion. Inadequate loss reserves are cited as the cause of insolvencies, when the recording of previously inadequate loss reserves either eliminates or materially reduces the insurer’s surplus.

Examples of insurers that have become insolvent due, at least in part, to inadequate loss reserves include the following:

- **PHICO Insurance Company** – This company wrote primarily medical malpractice insurance for health systems, hospitals, and physicians and workers’ compensation insurance.¹⁹ Many of its insureds were located in Pennsylvania. After conducting an extensive audit of PHICO’s reserves and liabilities, the PID determined that PHICO did not have sufficient assets to cover its estimated liabilities. According to the Insurance Journal, as of August 2001, PHICO had surplus of \$6.8 million,²⁰ which the PID characterized as an “alarming decrease

¹⁵ National Association of Mutual Insurance Companies

(<http://www.namic.org/pdf/05NAMICCostBenefitStudy.pdf>) (last visited on June 9, 2006).

¹⁶ Guaranty Fund Management Services (<http://www.gfms.org/insolvs.asp?id=164>) (last visited on June 9, 2006).

¹⁷ *Insurance Journal* (<http://www.insurancejournal.com/magazines/southeast/2006/02/20/currents/>) (last visited on June 9, 2006).

¹⁸ *Insurance Journal* (<http://www.insurancejournal.com/news/national/2006/02/09/65216.htm>) (last visited on June 9, 2006).

¹⁹ Pennsylvania Insurance Department (<http://www.ins.state.pa.us/ins/cwp/view.asp?a=1285&q=539640>) (last visited on June 9, 2006).

²⁰ *Insurance Journal* (<http://www.insurancejournal.com/news/east/2001/08/27/12468.htm>) (last visited on June 9, 2006).

from its year-end 2000 surplus of more than \$127 million.”²¹ The PID’s “analysis concluded that the company's previous estimates of loss reserves were substantially understated. In fact, this recent analysis showed that a reserve deficiency exceeding \$250 million existed as of June 30, 2001. PHICO Insurance Company did not establish adequate reserves, nor does the company have the assets available to cover the shortfall. This gap between assets and liabilities renders the company insolvent.”

- The “Failed Promises” report states that three of the first major insurer insolvencies (Mission Insurance Company, Integrity Insurance Company, and Transit Casualty Company) “established reserve amounts that were completely inadequate and their incurred-but-not-reported reserves have proven to be vastly deficient. The result of this massive under-reserving was to falsely and materially inflate their reported profits and justify improper dividends. Even worse, their rosy financial reports enabled them to compound their havoc by continuing to operate for years while actually insolvent.”

- **Mismanagement**

Mismanagement has often been cited as a major cause of insurer insolvency. The “Failed Promises” report includes lengthy discussions of mismanagement as it related to subsequent insolvencies. Examples of insurers that are believed to have become insolvent due to mismanagement include the following:

- **Integrity Insurance Company** was a small, family run business that grew into a national operation in less than a decade. It was declared insolvent by more than \$1 billion by the New Jersey Insurance Department in 1987.²² Integrity began a period of significant growth in the 1970s with large amounts of premium generated by managing general agents (MGAs).²³ According to a 1990 article in the Wall Street Journal, Integrity did business with about 80 MGAs, much of which was reinsured.²⁴ Gross written premium increased from about \$5 million annually in the early 1970s to \$88.6 million in 1979. Net income climbed significantly at first as well. With net income rising, dividends were paid to shareholders of \$14.9 million. State insurance examiners found Integrity sound in 1981 with about \$20.3 million of surplus as of year-end 1980.

However, several important facts had not been uncovered. First, Integrity was writing insurance on about 300 of the Fortune 500 industrial companies. This included Union Carbide when the gas leak in Bhopal, India occurred. Second,

²¹ Pennsylvania Insurance Department (<http://www.ins.state.pa.us/ins/cwp/view.asp?a=11&q=525255>) (last visited on June 9, 2006).

²² *Regulation Magazine* (<http://www.cato.org/pubs/regulation/reg14n2d.html>) (last visited on June 9, 2006).

²³ United States General Accounting Office (<http://archive.gao.gov/d31t10/141458.pdf>) (last visited on June 9, 2006).

²⁴ Casualty Actuarial Society (<http://www.casact.org/pubs/dpp/dpp92/92dpp867.pdf>) (last visited on June 9, 2006).

Integrity did not have an underwriting department until 1978.²⁵ This suggests that there were no checks on the activities of the MGAs, whose interests are potentially in conflict with those of the insurer. Third, Integrity, a small insurer, was writing long-tail business on increasingly tough insurance exposures. Fourth, Integrity had no computer system with which one could track writings.

During the 1980s, the loss ratio increased significantly. Finally in 1985, Mission Insurance failed. Mission was one of Integrity's major reinsurers with assumed losses of about \$18 million.²⁶ According to the Wall Street Journal article, the New Jersey regulators allege that Integrity was actually insolvent in 1981. Integrity wrote almost \$800 million of premium after the 1981 audit.

- **Frontier Insurance Company** – This company wrote a variety of insurance coverages, and much of its business was written through programs. It also had sizeable books of medical malpractice and surety business.²⁷ Its medical malpractice business was significantly underpriced and produced substantial adverse loss development. Frontier incurred \$38.5 million of losses on surety bonds covering three entertainment events.²⁸ Frontier also had reinsurance recovery issues; inadequate management controls in several areas contributed to its insolvency.
- **Ambassador Insurance Company** was a “surplus lines company” writing high-risk policies. Ambassador was domiciled in Vermont despite having its offices in New Jersey. In 1983, the Vermont insurance commissioner placed Ambassador in receivership, alleging that the company was insolvent.²⁹ The commissioner subsequently prevailed in a lawsuit against the late president of Ambassador citing mismanagement, and against Ambassador's auditor at the time, citing faulty audits.

- **Reinsurer Insolvency or Non-Payment**

The non-payment by an insurer's reinsurer has contributed to several insolvencies and impairments. Examples include the following instances in which insolvency was caused by the nonpayment by a reinsurer:

- **Reliance Insurance Company** purchased reinsurance through the Unicover pool. The non-payment by Unicover contributed to Reliance's failure, although many other factors contributed as well.

²⁵ United States General Accounting Office (<http://archive.gao.gov/d31t10/141458.pdf>) (last visited on June 9, 2006).

²⁶ United States General Accounting Office (<http://archive.gao.gov/d31t10/141458.pdf>) (last visited on June 9, 2006).

²⁷ *Insurance Journal* (<http://www.insurancejournal.com/magazines/west/2001/09/24/features/18252.htm>) (last visited on June 9, 2006).

²⁸ SEC Info (EDGAR) (<http://www.secinfo.com/dsvRa.5Tm.htm>) (last visited on June 9, 2006).

²⁹ *Insurance Journal* (<http://www.insurancejournal.com/magazines/east/2005/11/21/features/63041.htm>) (last visited on June 9, 2006).

- **Legion Insurance Company** wrote a variety of insurance coverages, mostly of a long-tail nature.³⁰ Coverages included a large amount of workers' compensation coverage, as well as coverage written for self-insured, mid-sized corporations, and associations.³¹ Much of this business was written in programs and was significantly underpriced. Its direct business was heavily reinsured, adding leverage to their financial statements. Several reinsurers disputed the losses ceded by Legion.³² During 2002, Legion had outstanding reinsurance arbitration disputes involving about \$63 million. These reinsurance disputes precipitated the failure of Legion.

- **Catastrophes and Mass Torts**

An individual catastrophe or mass tort has the potential to drive an insurer into insolvency or to significantly impair its surplus. Examples of catastrophes that caused the insolvency or impairment of one or more insurers include the following:

- Hurricane Andrew hit Florida on August 24, 1992 as a Category 5 hurricane. According to the Insurance Information Institute website, the insured loss was \$15.5 billion, or \$22.3 billion in 2005 dollars.³³ According to the Florida Insurance Department website³⁴, the hurricane caused the insolvency of ten Florida insurance companies.
- Asbestos does not appear to have been cited as the principle cause of failure of any insurer. However, asbestos caused the insolvency of many industrial companies, such as Johns Mansville, Armstrong World, and many others.³⁵ These and other companies filed asbestos claims with insurers that totaled about \$55 billion as of December 31, 2004.³⁶ While asbestos claims may not have been the primary cause of the failure of any insurer, they have had a material impact on the financial strength of many insurers. CIGNA incurred significant losses from asbestos and other mass torts that forced their reorganization, and ultimately their sale, to the Ace Insurance Group.³⁷

³⁰ Pennsylvania Insurance Department (<http://www.ins.state.pa.us/ins/cwp/view.asp?a=1285&q=542923>) (last visited on June 9, 2006).

³¹ Pennsylvania Insurance Department (<http://www.ins.state.pa.us/ins/cwp/view.asp?a=1285&q=542923>) (last visited on June 9, 2006).

³² Pennsylvania Insurance Department (Legion List of Assets) (http://www.ins.state.pa.us/ins/lib/ins/liq_rehab/legion-list-of-assets.pdf) (last visited on June 9, 2006).

³³ Insurance Information Institute (<http://www.iii.org/media/hottopics/additional/isofactsheet/>) (last visited on June 9, 2006).

³⁴ Florida Office of Insurance Regulation (<http://www.floir.com/>) (last visited on June 9, 2006).

³⁵ THOMAS (Library of Congress) (http://thomas.loc.gov/cgi-bin/cpquery/?&dbname=cp106&sid=cp106FWNRg&refer=&r_n=hr782.106&item=&sel=TOC_263257&) (last visited on June 9, 2006).

³⁶ Casualty Actuarial Society (<http://www.casact.org/media/press/032604a.htm>) (last visited on June 9, 2006).

³⁷ Lexisone.com (<http://www.lexisone.com/news/nlibrary/m051606j.html>) (last visited on June 9, 2006).