AMERICAN ACADEMY *of* ACTUARIES

# RISK TRANSFER IN P&C REINSURANCE: REPORT TO THE CASUALTY ACTUARIAL TASK FORCE OF THE NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS


**American Academy of Actuaries,**
**Committee on Property and Liability Financial Reporting**


**August 2005**

The American Academy of Actuaries is the public policy organization for actuaries practicing in all specialties within the United States. A major purpose of the Academy is to act as the public information organization for the profession. The Academy is non-partisan and assists the public policy process through the presentation of clear and objective actuarial analysis. The Academy regularly prepares testimony for Congress, provides information to federal elected officials, comments on proposed federal regulations, and works closely with state officials on issues related to insurance. The Academy also supports the development and enforcement of actuarial standards of conduct, qualification and practice, and the Code of Professional Conduct for all actuaries practicing in the United States.


**1100 17th Street NW Seventh Floor Washington, DC 20036 Telephone 202 223 8196 Facsimile 202 872 1948 www.actuary.org**

# RISK TRANSFER IN P&C REINSURANCE:
# Report to the Casualty Actuarial Task Force of the National Association of Insurance Commissioners

## TABLE OF CONTENTS

# INTRODUCTION

## Purpose of Report

This is a report from the Risk Transfer Subgroup (RTS) of the American Academy of Actuaries' (Academy") Committee on Property and Liability Financial Reporting (COPLFR) to the Casualty Actuarial Task Force (CATF) of the National Association of Insurance Commissioners (NAIC). The report contains the results of a survey of current industry practices regarding risk transfer, and alternative approaches to the evaluation of risk transfer.

In this report, the RTS has compiled information and ideas on the topic of risk transfer in reinsurance. This information includes responses and an evaluation of such responses from the survey of current industry practices. In addition, it includes a variety of alternatives to evaluating risk transfer suggested by actuarial professionals practicing in the industry. While we have provided a compilation of these approaches herein, including a high-level description and some possible advantages and disadvantages of each approach, the report does not endorse any one approach. Rather, the information and alternatives have been provided for the CATF for its consideration in evaluating reinsurance accounting and risk transfer requirements.

*This report is not an Actuarial Standard of Practice. It has not been adopted by the Actuarial Standards Board (ASB) and is not binding on any actuary. It should not be deemed to describe or codify generally accepted actuarial practice. From the perspective of the actuarial profession, the evaluation of risk transfer is an evolving practice and there does not yet exist generally accepted practice for it.*

## Background

The Property and Casualty Reinsurance Study Group ("Study Group") of the NAIC Accounting Practices and Procedures (E) Task Force is currently studying the analysis of risk transfer to qualify for reinsurance accounting. In a memorandum dated March 24, 2005 the Study Group requested the following assistance of the CATF:

- Identify what risk transfer tests are being used in the industry today.
- Provide guidance on what the minimum transfer of risk standard should be.

The Study Group has indicated its intention to complete analysis and be prepared to adopt changes effective year-end, so they requested an update from the CATF at the Summer Meeting and a final report by the Fall National Meeting.

## Risk Transfer Subgroup

COPLFR is a committee of the Academy that deals with property/casualty financial reporting issues. COPLFR formed the RTS, composed of property/casualty actuaries from a variety of consulting, regulatory and industry backgrounds, to provide technical assistance to regulators, standard-setters and other governing bodies as necessary in the risk transfer area.

At the request of the CATF, and as described in a letter dated April 13, 2005, COPLFR's RTS agreed to provide the following assistance to the CATF by performing two projects:

- Develop a survey of companies in the U.S. regarding their current risk transfer practices with respect to property/casualty insurance for the NAIC to issue.

- Develop a summary of alternative approaches, including pros and cons of each approach, for the CATF's consideration with respect to a standard on risk transfer.

Over the past five months the RTS, along with a liaison committee comprised of several CATF members, has conducted these two projects. This report contains the information and findings developed from both projects.

## Organization of Report

The remainder of this report is organized as follows:

- "Executive Summary" contains a high-level summary of the RTS' findings and observations.

- "Key Accounting Principles" contains a brief description of the statutory and GAAP accounting principles for risk transfer in reinsurance contracts that are referenced frequently in this report.

- "Risk Transfer Survey" provides a summary of the responses to the NAIC's survey of U.S. property/casualty insurance companies regarding their practices for evaluating and documenting risk transfer in reinsurance contracts.

- "Risk Transfer Alternatives" provides a summary of responses from efforts to gather ideas from the property/casualty actuarial community regarding possible standards and approaches for evaluating risk transfer in reinsurance contracts.

- "Conclusion" contains our understanding of the next steps with respect to this effort, and a list of the RTS and CATF members who contributed to this effort.

- Appendix 1 contains the survey referenced above and a summary of the responses.

- Appendix 2 contains copies of the submissions from casualty actuaries regarding a proposed/suggested standard on risk transfer.

# EXECUTIVE SUMMARY

This report and its appendices are a compilation of insurance company responses and ideas on the topic of risk transfer with reinsurance contracts. This information includes responses and an evaluation of such responses from the survey of current industry practices. In addition, it also includes a variety of alternatives to evaluating risk transfer suggested by actuarial professionals practicing in the industry. We are providing this information to the CATF in its entirety for its consideration in evaluating reinsurance accounting and risk transfer requirements.

COPLFR formed the RTS in April 2005. During the last five months, its members have received a significant amount of information on the topic of risk transfer. In addition to the survey and suggested alternatives, we have consulted the industry, spoken with insurance professionals serving in a variety of roles in the industry and received other unsolicited e-mails and ideas. Based on these interactions and our professional experience, we have several overriding considerations that we would like to provide to the CATF; these are discussed below.

The testing rules prescribed first by FAS 113 and then by SSAP 62 regarding the evaluation of risk transfer appear to have been designed to assess certain contracts that were designed in a manner that significantly reduced the reinsurer's downside risk. In the past ten years, subsequent to the introduction of the prescribed testing rules, a variety of new circumstances have occurred, from the 10/10 rule becoming a commonly used test to a proliferation of contracts that may have been designed to meet that rule only marginally.

We believe that until recently, perhaps as recently as 2004, cashflow testing to evaluate reinsurance risk transfer in an accounting context was mostly limited to contracts deemed to be "finite," in which the reinsurer's downside risk is significantly limited and in which the business purpose appears to have significant financial statement-related elements in addition to insurance-related elements. Reinsurance contracts deemed to be non-finite or "traditional" were not typically subject to cashflow testing, presumably because the reinsurer's potential downside risk was sufficiently severe that the presence of risk transfer was deemed to be self-evident.

As concerns over industry practice have emerged, it has been suggested that such testing should be expanded from finite agreements to traditional agreements. However, to our knowledge, there does not exist practical guidance on:

- What contracts should be cashflow tested, and whether certain types of contracts should be exempt;
- Why a traditional contract would or would not be cashflow tested;
- If necessary, how a traditional contract would be cashflow tested;
- Whether the "reasonable possibility of a significant . . . loss" provision in SSAP 62 is appropriate to apply to traditional contracts; and
- When, if ever, it is appropriate to consider bifurcating a reinsurance contract.

We believe that a lack of guidance and consensus on these issues is largely responsible for some of the difficulty in assessing whether or not companies are properly complying with accounting standards with respect to risk transfer. Irrespective of what changes, if any, are made by the NAIC to SSAP 62, we believe that guidance related to these questions is imperative to avoid two undesirable outcomes:

- Unnecessary effort and administrative expense associated with cashflow testing and modeling contracts where risk transfer is self-evident; and
- The potential for unintended consequences, such as counter-intuitive accounting decisions, as a result of a mismatch between the testing prescribed by SSAP 62 and the economic reality of reinsurance.

Regarding the second point, one of the traditional functions of reinsurance has always been to protect companies against potential losses whose probabilities are unknown and, in some instances, unknowable. Two examples of risks that were unknowable at the time reinsurers accepted them are the emergence of asbestos losses and the terrorist attacks of September 11. Although the probabilities of such extreme events may have been deemed remote or even zero at the time the reinsurers wrote the underlying contracts, nevertheless these events occurred and have been a significant share of reinsurers' underwriting losses. The RTS does not believe that a test that hinges on a reasonable estimate of the probability of the reinsurer's loss is sufficient to encompass the instance of the true transfer of unknown risk.

In addition, based on our reading the survey responses and the submissions to our call for risk transfer alternatives, we would like to identify several matters for the CATF's consideration:

- We do not believe a bright-line approach, without allowance for judgment, is an optimal approach. There are some contracts for which cashflow testing using a standard of "reasonable possibility of significant loss" as prescribed in SSAP 62 cannot always be appropriately applied, and for which a reasonable bright-line threshold would be difficult or impossible to establish. For example, there are contracts where, as it regards the business being reinsured, the ceding company's expense is fixed and known at the date it enters into a contract and the reinsurer is assuming the variability of the resultant loss experience. In these circumstances, when the probability of loss to the reinsurer is unknown or thought to be very small but the potential loss is very large, risk transfer can often be deemed self-evident, and cashflow testing coupled with bright-line standards may be neither appropriate nor relevant. Therefore, we believe these contracts, in which risk and reward are effectively transferred away from the cedant regardless of the probability of loss, should not be subject to cashflow testing using a standard of "reasonable possibility of significant loss" as prescribed in SSAP 62. We note that expansion of the Paragraph 11 Exception may be controversial, but that there may be other justifications sufficient for this purpose.

- Just as there are many acceptable loss reserving methods, we believe that there can be many acceptable risk transfer testing methods. No one method will always be better than the others, and the appropriateness of any given method will depend on the individual circumstances. Furthermore, just as with loss reserving, it is possible that a best practices approach for evaluating risk transfer might involve input from a combination of approaches.

- We believe that the Expected Reinsurer Deficit test described in the CAS Working Party report may be a useful testing method that follows the precepts for cashflow testing outlined in SSAP 62. However, we do not believe it is appropriate to apply it as a bright-line standard test, and we believe that further analysis is required to determine what threshold may be reasonable under various circumstances.

- We believe the concepts outlined in the Gluck, Wenitsky and Belfatti papers may also be helpful. This type of testing does not really follow the precepts for cashflow testing outlined in SSAP 62; rather, the tests in these papers focus on the relationship between the reinsurer's results and the ceding company's results to determine what portion of the risk is transferred.

- The methods described in the Gluck, Wenitsky and Belfatti papers all yield percentages that can be used either as a risk transfer test for "either-or" accounting or to bifurcate contracts. The RTS was not asked to evaluate, and has not evaluated, the feasibility of bifurcation as an accounting concept. Absent such an evaluation, RTS members have various opinions as to whether bifurcation is feasible as an accounting practice. If the NAIC wishes to consider these or other methods for the purpose of bifurcation, we recommend further analysis on real-life contracts to determine what types of situations are appropriate for bifurcation, how the accounting would be done, how complicated and useful the bifurcation process would be, and whether the results would improve the matching of accounting versus economics for the sample contracts.

- There were many valuable suggestions contributed to our question regarding safe harbors. Different respondents often focused on quite different factors, so we believe that there is no universally accepted definition of what constitutes "reasonable self-evidence" with respect to risk transfer. We believe that the publication of specific guidance by the NAIC regarding safe harbors, perhaps based on the suggestions contained in this report, would be a valuable and important development.

- According to the survey responses, the current practice regarding the evaluation and quantification of insurance risk appears to be largely an accounting function, with limited actuarial involvement. However, the alternatives suggested require a fairly sophisticated knowledge of actuarial concepts such as parameter risk, probability distributions, trending, etc. Should the tester of risk transfer not have adequate training in this area, we are concerned that the results of the tests may not be meaningful. Therefore, we believe that increased actuarial involvement in risk transfer testing is essential.

- We also believe that additional actuarial guidance on risk transfer testing should be developed within the actuarial profession. We would note that the RTS intends to develop a Practice Note on Risk Transfer Testing as a first step later this fall.

As the CATF evaluates the items in this report and prepares recommendations to the Study Group, there are many items to consider and evaluate. COPLFR is available to assist the CATF and the Study Group in this evaluation process. Since our primary focus would be financial reporting and policy issues, we further encourage the CATF to consider the Casualty Actuarial Society as an excellent resource for further technical research in this area.

## KEY ACCOUNTING PRINCIPLES

Under Statement of Statutory Accounting Principles No. 62 "Property and Casualty Reinsurance" ("SSAP 62"), indemnification of a ceding entity against loss or liability relating to insurance risk in reinsurance requires both of the following:

a. The reinsurer assumes significant insurance risk under the reinsured portions of the underlying insurance agreements; and

b. It is reasonably possible that the reinsurer may realize a significant loss from the transaction.

Contracts satisfying both a. and b. above are typically viewed as contracts that "transfer risk"; this phrase is used frequently in this report.

SSAP 62 contains one exception, typically referred to as the "Paragraph 11 Exception," to these requirements in the case that "the reinsurer has assumed substantially all of the insurance risk relating to the reinsured portion of the underlying insurance contracts."

SSAP 62 also states that:

- A reinsurer shall not have assumed significant insurance risk under the reinsured contracts if the probability of a significant variation in either the amount or timing of payments by the reinsurer is remote.

- The ceding entity's evaluation of whether it is reasonably possible for a reinsurer to realize a significant loss from the transaction shall be based on the present value of all cashflows between the ceding and assuming companies under reasonably possible outcomes, without regard to how the individual cashflows are described or characterized.

The above provisions in SSAP 62 are essentially the same as those in FAS 113, "Accounting and Reporting for Reinsurance of Short-Duration and Long-Duration Contracts."

# RISK TRANSFER SURVEY

The CATF issued a survey to U.S. domiciled insurance companies regarding the industry's current practice on evaluating and documenting risk transfer as it relates to reinsurance contracts. The survey was issued by the CATF in June 2005 to insurance company groups, and responses were received within approximately 30 days. The survey responses were then provided by the CATF to the RTS without information that could identify individual respondents. This section of the report contains a description of the survey and an evaluation of the survey responses.

## Contents of Survey

The survey has the following sections:

- Background Questions
- Criteria: the criteria for choosing which reinsurance agreements will be tested for risk transfer,
- Risk Transfer Testing and Threshold: the nature of the risk transfer tests being used, and the threshold being used to determine whether or not an agreement meets the requirements for reinsurance accounting

Appendix 1 contains a copy of the survey and a summary of responses to the survey.

## Summary of Observations

There were 390 survey responses provided to the RTS by the CATF; our observations as they relate to those responses are provided in detail below. Following are a few of our more significant conclusions:

- Approximately 25% of those receiving the survey provided responses – however, we believe it is possible that larger companies were underrepresented relative to small and mid-sized companies. Interestingly, where observed, and where we considered it to be statistically significant, the size of the company did not appear to have a significant bearing on most responses.

- Based on responses to question #3, for the majority of respondents, there are no individual terms, conditions or other characteristics that define a contract as "finite." This might suggest that the respondents generally believe such a definition is a matter of substance rather than form, and might arise from a combination of certain conditions.

- Approximately 23% of respondents have entered into at least one ceded finite contract in the past four years – large insurers were slightly more likely, at 29%.

- It is uncommon for a company to have a formal written policy regarding the evaluation of reinsurance accounting and risk transfer; this is even the case for those that have entered into finite ceded contracts in the past four years.

- As evidenced by the responses to question #16 and #17, the evaluation and quantification of insurance risk appears to be largely an accounting function. It is rare that actuaries actually lead the evaluation of ceding and assuming company risk transfer evaluations. It is also uncommon that the respondents have a requirement that risk transfer analyses require internal actuarial approval.

- Similarly, a minority of respondents (31%) employ statistical / modeling approaches to evaluate risk. This percentage is much higher (70%) when actuaries lead the risk analysis. Further, most companies

report that they do not explicitly consider process, parameter, or acceleration risk. This suggests that companies may either be performing an incomplete evaluation of risk, or that their approaches do not allow them to explicitly identify the types of risks being evaluated.

Although the need for risk-transfer testing arises from the application of accounting rules, we believe that it would be beneficial for actuaries, who have significant expertise in evaluation and quantification of insurance risk, to take a larger role in this process.

- Relatively few respondents rely exclusively on a numeric test to evaluate whether there is sufficient risk transfer. Most use calculations as a starting point, supplemented by other considerations and judgment. Where applicable, the 10/10 rule (i.e., 10% chance of a 10% loss) was the most common numerical threshold used by respondents in determining risk transfer. However, many respondents elected not to respond to this question.

The remainder of this report contains our evaluation of responses by category of questions in the survey. When reading the discussion below, it would be helpful to refer to the survey and summary of responses in Appendix 1.

It is important to note that additional evaluations of the survey's responses are possible based on different organizations of the responses – for example, responses for stock companies versus mutual companies.

## Background Questions

Based on responses to question #1 regarding surplus, 71% of respondents were smaller companies (i.e., less than $100 million in surplus), 23% were mid-sized companies and 5% were larger companies (more than $1 billion in surplus). The responses were skewed even more to smaller companies based on net written premiums – 78% for smaller companies, (less than $200 million in net written premiums), 19% for mid-sized companies and 3% for larger companies (more than $2 billion in net written premiums). As such, it is possible that larger companies are underrepresented in this survey.

Hereafter, we will refer to companies as small, mid-size and large based on the levels of surplus in reference to the above questions.

For question #2, only 5% of respondents had a definition of finite reinsurance that was substantially different than that contained in the cover letter. For those who disagreed with the definition in the cover letter, the most common response was that the company did not have a definition because finite reinsurance is not used by the company. Several respondents provided alternate definitions, which varied widely from any contract not providing unlimited aggregate limits to contracts that had no risk transfer.

Based on responses to question #3, for the majority of respondents, there are no individual terms, conditions or other characteristics that define a contract as "finite." Also based on the responses to question #3, the characteristics that are mentioned most often, by an average of about 35% of respondents, were contracts where it is viewed as likely that the ceding company will exercise their unilateral right to commute shortly after the exposure period, quota share contracts with aggregate loss ratio caps, and funds withheld arrangements coupled with experience refund accounts. Contract features which are least often mentioned as indicating that a contract is finite are multiple year contracts, loss carry forwards and experience refunds.

For questions #4 and #5, only 7% (28 of 390) of respondents have entered into an assumed finite contract in the last four years, and only 1% (5 of 390) of respondents have dedicated units designed to write assumed finite reinsurance. All else equal, we would have expected a higher percentage than 1% - this might further suggest that larger companies are underrepresented in the survey, since it is usually larger companies that have such dedicated units.

For question #6, 23% of respondents entered into a ceded finite contract in the past four years – the range is 21% for small insurers, 25% for medium insurers and 29% for large insurers. This is a much higher percentage than those insurers that entered into assumed finite contracts in #4 above. While this is consistent with our expectation that most assumed finite contracts are written by a relatively small number of companies, a contributing factor could be that larger companies, which would be more likely to have units dedicated to writing finite contracts, might be underrepresented in the survey.

## Criteria

For question #7, only 31% of respondents, excluding those who responded "not applicable," have a formal written policy regarding the evaluation of reinsurance accounting and the application of appropriate accounting rules and regulations to its ceded reinsurance products. Interestingly, for the respondents who indicated that they entered into a ceded finite contract in the past four years (question #6), only 29% have a formal written policy.

Question #8, which asked the same question as #7 from the assuming company's perspective, had similar responses. Excluding those who responded "not applicable," 22% of respondents have a formal written policy regarding the evaluation of reinsurance accounting as described above. Interestingly, however, nearly half (11 of 23) of the respondents that have written a finite contract in the past four years have a formal written policy.

Based on responses to question #9, the majority of the respondents (75%) believe there are classes of contracts that may be deemed to be clearly reinsurance and which therefore do not require detailed review to determine risk transfer or appropriate accounting treatment.

Question #10 asked, for ceded reinsurance, which reinsurance contracts are reviewed in detail for accounting treatment and risk transfer. Excluding those who responded "not applicable" (question #10f), the majority (71%) of the respondents reported that all contracts were reviewed. Based on the responses, it would appear that the other considerations listed, such as materiality, existence of catastrophe exposure, and the existence of loss limiting features were rarely determining items in selecting which contracts to review in detail for accounting treatment and risk transfer.

The results for #9 and #10, when considered together, appear to produce an inconsistent result. For example, based on question #9 the majority of respondents believe there are classes of contracts that clearly transfer risk and as such detailed review is not required. Nevertheless, a significant majority of these companies noted that all contracts were reviewed in detail for risk transfer.

Question #11 requested information as to what documentation is maintained by the respondent for its ceded reinsurance contracts; a summary of the responses is as follows (Note this summary excludes those respondents that answered "not applicable" to question #10f, since it is assumed those respondents do not have ceded reinsurance):

- The vast majority of respondents, approximately 95%, reported that relevant correspondence between the parties is maintained in the ceding companies' file.

- The majority of respondents, 63%, indicated there is typically a copy of each draft of the contract in the ceded reinsurance file.

- It was less common, about 37% of the time, that a risk transfer calculation was included in the contract file. Larger insurers were more likely to maintain such information (58% of respondents).

- Approximately 28% of the respondents maintain a memorandum from management describing the business purpose of the contract and other relevant concerns – similar to risk transfer documentation, larger companies were more likely to maintain such information (47% of respondents).

- Signoff from the internal accounting management and internal actuarial management were rarely included – internal accounting and internal actuarial signoff were included less than 15% of the time. In fact, even for respondents that included risk transfer analyses in the contract file, only 17% of these respondents included internal actuarial sign-offs. A somewhat greater percentage, 27%, of such respondents included internal accounting sign-off in the file.

- It was also rare, less than 15% of the time, that external auditor or regulatory signoff was included in the ceded reinsurance contract files.

Questions #12 and #13 were identical to question #10, except it was asked from the assuming company's perspective rather than the ceding company's perspective.

Question #12 asked which assumed reinsurance contracts are reviewed in detail for accounting treatment and risk transfer. Excluding those who responded "not applicable" to question #12f, approximately two-thirds of respondents mentioned that all contracts were reviewed – this was a similar percent as those who responded from a ceding company perspective in question #10. Also similar to question #10, the other considerations listed, materiality, existence of catastrophe exposure, etc., were rarely determining items in selecting which contracts to review in detail for accounting treatment and risk transfer.

Question #13 asked what documentation is maintained by the respondent for its assumed reinsurance contracts. Again, excluding those who responded "not applicable" to question #12f, the responses were similar to question #11, except that it was somewhat less likely that the assuming company would have as comprehensive a contract file as the ceding company:

- A significant majority of respondents, approximately 85%, reported that relevant correspondence between the parties is maintained in the ceding companies' file.

- Slightly more than half of respondents, 53%, indicated there is typically a copy of each draft of the contract in the ceded reinsurance file.

- A risk transfer calculation was included by 23% of respondents in the contract file. Unlike from the ceding company perspective, larger insurers were not more likely to maintain such information for assumed contracts.

- Approximately 16% of the respondents maintain a memorandum from management describing the business purpose of the contract and other relevant concerns. Larger companies were more likely to maintain such information (33% of respondents).

- Internal accounting management and actuarial management sign-offs were included by less than 10% of the respondents. For respondents that included risk transfer analyses in the contract file, 21% of these respondents included internal actuarial sign-offs, and 30%, of such respondents included internal accounting sign-off in the file.

- External auditor or regulatory signoff was included in the ceded reinsurance contract files by less than 10% of the respondents.

## Risk Transfer Testing and Threshold

Questions #14 and #15 asked respondents if their group has a formal written policy regarding the evaluation of risk transfer for its ceded and assumed reinsurance products, respectively. Excluding those who responded "no ceded reinsurance" or "no assumed reinsurance'" it was evident that most companies do not have such written policies – only 17% for ceded reinsurance, and 13% for assumed reinsurance.

Questions #16 and #17 asked respondents who leads the evaluation of risk transfer for their ceded and assumed reinsurance products, respectively. Excluding those who responded "no ceded reinsurance" or "no assumed reinsurance," the responses to these questions were similar to one another. For both ceded and assumed reinsurance, the accountants were the most commonly identified group to lead the evaluation of risk transfer. In addition, there was a relatively large percentage (one-quarter for ceded contracts, one-half for assumed contracts) of respondents that answered "other" – a common written response to those who replied "other" was individual members of senior management, such as the Chief Financial Officer or a committee composed of several members of senior management.

Question #18 asked respondents what type of testing is performed in the evaluation of risk transfer for contracts that are tested for risk transfer, allowing multiple answers. Question #19 asked respondents to select the type of testing that is predominantly used.

- For question #18, the most common response, from 64% of respondents, was a review of historical results. The next most common response, from approximately one-third of respondents, was the development of a single scenario via judgment that could be viewed as reasonably possible. As it regards more statistical and modeling based analyses, approximately 31% of respondents performed either stochastic simulation or confidence level analysis; however, this percentage is much greater, approximately 70%, when actuaries lead the risk transfer analysis (question #16, response d).

- The responses for question #19 closely followed those for 18. Historical results were the most common test applied – 44% of respondents. Statistical and modeling based analyses were used by 24% of the respondents. A single scenario was used by 14%, while the remaining respondents cited "other."

Question #20 asked which risks are explicitly considered in the calculations used to evaluate risk transfer. Based on the responses, most companies report that they do not explicitly consider process, parameter, or acceleration risk. This suggests that companies may either be performing an incomplete evaluation of risk, or that their approaches do not allow them explicitly to identify the types of risks being evaluated. Companies that employ statistical/modeling approaches are significantly more likely to explicitly consider these multiple sources of risk; below are the percentage reported for each category of risk:

- One-third of respondents considered process risk in calculations. However, this percentage increased to 57% for those respondents that use either or both stochastic simulation and/or confidence level analysis.

- There were similar percentages for parameter risk; 37% of respondents considered parameter risk in calculations, and this percentage increased to 66% for those respondents that use either or both stochastic simulation and/or confidence level analysis.

- As it regards the consideration of timing risk/acceleration of payment patterns, similarly one-third of respondents considered such risk; this percentage increased to 50% for those respondents that use either or both stochastic simulation and/or confidence level analysis.

Approximately 25% of respondents answered "other"; based on our review of the written responses, the most common response was "not applicable" or the equivalent.

Based on the answers to question #21, approximately one-third of respondents compare actual results under contracts to expectations from the risk transfer calculations. This percentage increases to 45% for those respondents that used stochastic simulation and/or confidence level analysis per question #18. For the total 124 respondents that have performed such a comparison, 54% responded that actual risk transfer or variation in results was estimated to be the same as from the risk transfer calculations. 18% responded that there was more actual risk transfer than expected, while only 4% noted there was less risk transfer. The remainder of the respondents answered "unknown."

For question #22, which asked, what models are used to evaluate risk transfer for most or all contracts, the responses were about evenly distributed between internal models, external models and a separate spreadsheet based model for each contract.

Based on the responses to question #23, numerical calculations coupled with judgment and/or other considerations were overwhelmingly the most common approach used to equate a numerical criterion to the accounting risk transfer standard of a "reasonable possibility of a significant . . . loss". Responses "c" and "d" were similar, in that calculations were a starting point only and that other considerations and judgment are factored into the evaluation. Responses "a" and "b" differed in that the use of judgment was not included in the response. Of those respondents that answered "a" through "d", 87% responded with "c" or "d".

Question #24 asked, for those whose response to question 23 was (a) or (b) or (c), what numerical criteria equates to a reasonable possibility of significant loss for most contracts. For the 98 respondents that answered this question, 86% selected a 10% chance of a 10% loss.

# RISK TRANSFER ALTERNATIVES

## Call for Responses

On June 13, 2005, the RTS sent a letter to all members of the Casualty Actuarial Society ("CAS") requesting suggestions regarding the analysis of risk transfer in reinsurance agreements. Property/casualty actuaries interested in contributing suggestions were asked to submit responses to one or more of the following questions:

1) What is an effective test for risk transfer? (Respondents were asked to focus on actuarial methodology and provide examples as appropriate.)

2) What criteria should be used to determine whether a reinsurance contract transfers significant risk to the reinsurer? (Respondents were asked to focus on decision criteria used to evaluate the results of the test described in question #1.)

3) What safe harbors, if any, should be established so that a full risk transfer analysis does not have to be completed for each and every reinsurance contract (i.e., in what instances is risk transfer "reasonably self-evident" and therefore cashflow testing is not necessary to demonstrate risk transfer)?

4) What are the advantages and disadvantages of the suggested approach versus other approaches commonly used?

The Casualty Actuarial Society formed a Research Working Party on Risk Transfer Testing ("CAS Working Party"), which developed a report ("CAS Report") in response to this call for suggestions. Besides the response of the CAS Working Party, submissions to the RTS call were received from 18 individual actuaries. The submissions from the CAS Working Party and individuals are contained in Appendix 2 to this report.

## Summary of Findings

While the responses were very diverse, thoughtful and generally well designed, there were several commonly recurring themes. Following is a listing of several of the more common and more highly emphasized themes *(in this section, RTS comments are presented in italics)*:

- Many respondents stated that the "10/10 rule," defined as a 10% chance of a 10% loss, was inadequate for purposes of testing across the spectrum of reinsurance agreements, and noted that frequency and severity of loss should be combined into one test statistic. This was particularly emphasized for agreements that reinsured low frequency/high severity risks. *The RTS concurs with this view. Further, we do not believe a bright-line approach, without allowance for judgment, is an optimal approach.*

- Several respondents believed that a risk transfer analysis must not only consider the variability of the reinsurer's results but also the variability of the underlying business. *The RTS concurs with this view.*

- Many respondents emphasized the need to consider parameter uncertainty, and the mismatch in information between the ceding company and reinsurer, in assessing risk. *The RTS concurs with this view and would add that we believe parameter uncertainty is an important, and often misunderstood, element of risk transfer.*

- Several respondents provided alternatives to the 10/10 rule for the evaluation of risk transfer. *The RTS suggests that the NAIC may wish to consider these alternative methods, and evaluate these alternative methods among a variety of "real world" reinsurance agreements to assess their feasibility and effectiveness.*

  *Several of the new risk transfer analysis methods suggested are worth serious consideration. The ones we consider most promising, in breaking new ground while attempting to strike a balance between theoretical soundness and practicality, are contained in the papers from the CAS Working Party, Gluck, Wenitsky and Belfatti. Furthermore, many of the ideas offered could be altered, or used in combination with each other; there is no one correct version of how to approach the subject of risk transfer.*

- Several respondents believe that the binary, "either-or" nature of accounting (i.e., contracts are either 100% reinsurance or 100% deposits) was inadequate to encompass contracts that contain both risk and financing elements, and suggested approaches to bifurcate contracts so that these elements could be accounted for separately. *The RTS was not asked to evaluate, and has not evaluated, the feasibility of bifurcation as an accounting concept. Absent such an evaluation, RTS members have various opinions as to whether bifurcation is feasible as an accounting practice. If the NAIC wishes to consider these or other methods for the purpose of bifurcation, we recommend further analysis on real-life contracts to determine what types of situations are appropriate for bifurcation, how the accounting would be done, how complicated and useful the bifurcation process would be, and whether the results would improve the matching of accounting versus economics for the sample contracts.*

- Several respondents introduced new ideas, often related to the Paragraph 11 Exception, to identify and potentially expand the types of contracts for which risk transfer is reasonably self-evident.

  *Although some of the ideas regarding safe harbors may be controversial, we believe that many of them have well-founded justifications and should be considered. We do not believe it is necessary to expand the Paragraph 11 Exception in order to justify safe harbors that exempt certain types of contracts from cashflow testing.*

The remainder of this section contains a discussion of the responses, organized by major topic. We have also included a comparison of results for two sample agreements using evaluation methods contained in five of the responses.

## Question 1: What is an effective test for risk transfer?

The responses to this question encompassed several major topics:

- Whether or not there should be a bright-line test;
- The general focus of a risk transfer test (e.g., distribution of ceded results, proportion of direct volatility ceded, etc.);
- Inputs used to model cashflows (e.g., should brokerage be deducted, should parameter risk be included, what discount factor should be used, etc.);
- Risk metric (e.g., tail value at risk ("TVaR") at a given percentile, conditional expected value, standard deviation of NPV results, etc.); and,
- Decision rule, including an indication of whether the decision between reinsurance and deposit accounting is "all or nothing" versus a continuum.

Following is a sampling of the responses received on each of these topics.

*Should there be a bright-line test at all?*

The CAS Report appears to imply that a bright-line quantitative test should not be the only method used to determine whether reinsurance accounting is appropriate. Some of the relevant comments are as follows:

- "No quantitative methodology will ever be fully successful in detecting intentional attempts at fraud or accounting abuse."
- "It would be a mistake to think that actuaries or any other quantitative expert can provide a formula that reduces the analysis of intent, good or bad, to a simple (or even complex) calculation."
- "The failure of a contract to meet a quantitative risk transfer test should not result in denial of reinsurance accounting treatment to a transaction without a thorough review of the all aspects of the deal, including the question of intent."

Other respondents made comments refuting the idea of a bright-line test; for example:

- (Koegel) "A common misconception in attempting to evaluate risk transfer in reinsurance is that probability of loss is a precise measure." Koegel recommends less emphasis on probability-based testing and more emphasis on the degree to which the cedant is indemnified once losses have occurred.
- (Hess) "The current role of judgment (from management on to the auditors) is an important part of the risk transfer rules. Applying an actuarially based measure of risk can be applied within the existing SSAP 62 and FAS 113 guidance...The 10/10 criteria or any other "bright line" test has never been included in any accounting guidance, nor should it be."

A few respondents, such as Bear, Cuzzi and Pastor, appeared to support bright-line tests and offered suggestions as to the types of tests that may be used.

As described by several respondents, the theoretical advantages of a bright-line test would be to reduce confusion regarding the meaning of the words "significant" and "reasonable" and increase consistency of practice. The RTS believes that the main disadvantages would be:

- The difficulty of designing a bright-line test that is effective, given the diversity of reinsurance agreements and subject business situations under which it must be applied;
- The necessary reliance on probability distributions and loss estimates that are imprecise, and often contain significant uncertainty;
- The reduction of reliance on professional judgment, and
- The potential for unintended consequences, such as the structuring of contracts to barely pass or in some way to get around the bright-line test.

*Focus of a risk transfer test*

Several authors made the point that a proper risk transfer analysis must take into account not only the reinsurer's results, but also the nature of the underlying business. For example, according to Hess:

> "A low probability, low severity transaction should pass risk transfer if the underlying book were similarly stable. A very unstable book could be insured by a reinsurance transaction that was low probability but high severity. Deposit accounting should be used for large variability underlying business protected by a low probability, low severity "reinsurance" transaction."

Further, according to Gluck:

> "The FAS 113 definition of risk transfer is fundamentally flawed, not just because of problems with the risk measures, but because the wrong risk is being measured. The two fundamental defects:

1. The definition of risk transfer does not contain the concept of risk transfer. Rather, the FAS 113 definition sets an absolute standard of the required level of assumed risk. A test of risk transfer requires a comparison of "before" and "after" risk. No single absolute standard can produce results that are meaningful regardless of the riskiness of the underlying cashflows.

2. The definition is influenced by fixed profit margins paid to the reinsurer. As discussed in the previous section, in determining proper accounting from the cedant's perspective, the relevant risk is the risk that the amounts carried in the cedant's financial statements are inadequate. Fixed profit margins are irrelevant. Furthermore, it is inappropriate for the risk transfer analysis to be influenced by the analyst's implicit second-guessing of the reinsurance pricing, which is unavoidably the case when applying the FAS 113 definition."

The CAS Working Party commented on this issue as follows: "We treat FAS 113 as it is currently constructed as a reasonable framework for evaluating risk transfer, subject to a fair interpretation of the critical elements of 'reasonable probability' and 'substantially all', despite some reservations about its focus on the financial effects (excluding brokerage and internal expenses) of a transaction on the reinsurer alone."

Further, White comments: "Accounting rules should not protect insurers from themselves. If insurers wish to purchase reinsurance that provides a windfall for the reinsurer, FAS 113/SSAP 62 should not be the regulation that protects them. In other words, reinsurers should not be forced to change terms of a contract to lower their profit because of an accounting rule. If regulators wish to offer such protections, they should pass such regulation."

*Inputs used to model cashflows*

In general, the submissions reflected similar reinsurance cashflow inputs to their models, corresponding to the guidelines in SSAP 62 and FAS 113. The CAS Working Party commented on this issue as follows: "Throughout the paper we use the FAS 113 definition of the reinsurer's loss, which ignores brokerage and the reinsurer's internal expenses. Our use of that definition should not be construed to mean that we endorse that definition for any purpose other than testing reinsurance contracts for compliance with FAS 113."

Several respondents expressed the opinion that it is important to reflect parameter uncertainty in the modeling of cashflows, for example:

- (CAS Working Party) "In any actuarial application where the knowledge of the loss distribution itself and not just its mean is important, it is very important that the modeling be based on loss models that incorporate parameter uncertainty, which is an important and frequently underestimated source of risk...Where the estimates are the result of applying large development and/or on-level factors, the likelihood of parameter error is especially large, and appropriately large adjustments must be made to the distribution to account for it."

- (Belfatti) "Very often, the data surrounding a risk is simply not sufficient to permit a reliable stochastic model from being developed. Lack of data, other things equal, suggests that it's more likely you've missed the mark widely in your estimates."

*Risk metric*

Some of the tests recommended in various submissions that focus on the reinsurer's results are as follows:

- CAS Working Party: Expected Reinsurer Deficit ("ERD")
- Wang: Transform 10-10 Rule and Right-Tail Deviation ("RTD")
- Cuzzi: TVaR
- Eramo: Value at Risk ("VaR") at a given percentile

Several of the authors suggested tests that reflect the relationship between the underlying business and the reinsurer's results, including:

- Gluck: Mean Square Adverse Deviation
- Wenitsky: Conditional Expected Downside
- Belfatti: Some combination of Conditional Expected Downside and TVaR

Please refer to the papers in Appendix 2 for a complete description of each of the above methods. Many of the above authors suggested more than one risk metric, and noted that additional research and testing should be done to determine the optimal risk metrics to be used in a risk transfer test.

*Decision rule*

Most of the suggested tests were structured so that the outcome would be an "all-or-nothing" or binary decision, which means that an agreement would be accounted for either as 100% reinsurance or 100% deposit. However, several respondents stated that this type of "either-or" accounting was inadequate to encompass contracts that contain both risk and financing elements, and suggested approaches to bifurcate contracts so that these elements could be accounted for separately. The risk transfer tests suggested by Gluck, Wenitsky and Belfatti, and the RTD test suggested by Wang, resulted in calculated percentages of measured risk transferred that could be used to bifurcate contracts.

According to Wenitsky, "If the reinsurer is in the same risk position on the ceded exposure as the cedant would have been had they retained the exposure, then the relative risk positions are identical, and full credit (reinsurance accounting) would be granted. To the extent that the reinsurer has mitigated the risk and is thus not 'standing in the shoes' of the cedant, a portion of the transaction, commensurate with the extent of relative risk mitigation, should be deposit accounted."

## Question 2: What criteria should be used to determine whether a reinsurance contract transfers significant risk to the reinsurer?

In answering this question, most respondents offered a threshold against which the risk metric was compared, such that a calculated amount, or "score," below that threshold would generate a decision to use deposit accounting and above that threshold, reinsurance accounting. For comparison purposes, the focus of the 10/10 rule risk transfer test is whether the expected reinsurer's losses at the 90$^{th}$ percentile are greater than 10% of premium.

Some of the responses were as follows:

- CAS Working Party: Although no specific threshold was proposed, the paper suggested that a 1% ERD threshold should be considered to be superior to the 10/10 rule, due to low frequency/high severity coverages failing 10/10.
- Wang: For the Transform 10-10 Rule, a threshold of –10%.
- (Name Withheld): Proposed a modified 10/10 test for risk transfer. A contract would pass the test if there exists a point such that the product of the probability of a NPV loss to the reinsurer and the NPV loss at that probability is 1%.
- Cuzzi: A dual test -- first applying the 10/10 rule, and then a TVaR test that measures the average result as a percentage of premium in the worst 10% of outcomes, so that a loss of at least 15% of premium sufficiently demonstrates risk transfer.
- Bear: Require that the contract pass a 10/10 type test for at least two probabilities, whereby the probabilities are at least 3% apart. For example, if it passes a 10/10 and a 15/5 then it passes.
- Pastor: Offers different criteria for different types of contracts, Quota Share, Catastrophe Excess of Loss and Other Excess of Loss. The default test for all three is a modified 10-10, but requiring the probability multiplied by the loss amount to be 2%.

As previously stated, the tests suggested by Gluck, Wenitsky and Belfatti and the RTD test suggested by Wang, resulted in percentage scores that could be used to bifurcate contracts. However, Gluck

recommended that, in order to avoid unnecessary bifurcation, thresholds could be set at some level (such as below 20% and above 80%) such that contracts with scores outside those thresholds would be accounted for as 100% deposit or 100% reinsurance. The RTS would further note that any of the risk transfer tests suggested for use in bifurcated accounting could also be used as an "either-or" test. For example, if a threshold of 75% were set, a contract scoring below that threshold would be accounted for as a deposit, and above 75% would be accounted for as reinsurance.

Many of the authors suggested that additional research and testing of real-world contracts should be done to determine the optimal threshold to be used in a risk transfer test.

**Question 3: What safe harbors, if any, should be established so that a full risk transfer analysis does not have to be completed for each and every reinsurance contract?**

Many authors believe that the topic of safe harbors is an important area of discussion and offered criteria to define contracts in which risk transfer is "reasonably self-evident":

- Koegel's criteria were based on the maximum premium receivable as a percentage of the maximum loss, and reinsurance contract provisions that reduce the loss to the reinsurer compared to the subject loss.
- One respondent (name withheld) offered criteria that differed for proportional versus excess of loss contracts, also based on the relationship between maximum premium and maximum loss.
- Belfatti's criteria included comparison of the maximum premium receivable as a percentage of the maximum loss, and the absence of loss-sensitive provisions or aggregate limits.
- Gluck's criteria were based on contracts that contained only "natural" provisions and not "structural" provisions.

Many of the above authors also noted the Paragraph 11 Exception in response to this question. Additionally, the CAS Report contains extensive discussion on the Paragraph 11 Exception and suggests that a broader definition be used, as follows:

"What is the 'insurance risk relating to the...underlying insurance contracts?' We see it as the downside risk associated with the cedent's portfolio of insurance, i.e., the exposure faced by the underwriter to incurring a loss. If the downside risk assumed by the reinsurer is essentially the same as that faced by the cedent with respect to the original unreinsured portfolio, then the contract transfers 'substantially all' the insurance risk."

Instead of limiting the Paragraph 11 Exception to unrestricted quota share contracts, which we understand is a common interpretation of this rule, it would be extended to any contract where the expected underwriting deficit ("EUD") of the reinsurer meets or exceeds that of the ceding company. Using this thought process, combined with an analysis using an ERD-based standard of "significant" risk, the CAS Report safe harbors generally include:

- Most standard catastrophe and individual risk excess of loss contracts.
- Contracts with expected loss ratios above a minimum permissible loss ratio (defined in the paper).
- Immaterial contracts.
- Proportional facultative and treaty reinsurance with effective ceding commissions no less than cedant expenses.
- Proportional facultative or treaty reinsurance for which it can be shown that the reinsurer's EUD is essentially the same as the cedant's EUD on the unreinsured subject portfolio, irrespective of whether the contract includes a loss ratio corridor, loss ratio cap or other risk mitigating feature.
- Excess of loss facultative or treaty reinsurance for which it can be shown that the reinsurer's EUD is essentially the same as the cedant's EUD on the portion of the original subject portfolio that is exposed to the same risks as the excess of loss contract.

- Whole account quota share contracts with loss ratio caps no lower than the point at which the ceding company would exhaust its surplus.

The CAS Working Party provided a rationale to expand the traditional usage of the Paragraph 11 Exception. Based on our review, the RTS would offer the following observations:

- An advantage of the CAS interpretation is that a relatively small loss limiting feature, such as a small corridor, would not render an entire quota share contract a deposit, particularly when the economics are very similar to a contract that has no limiting features.

- The major disadvantage of this approach is that the accounting profession has largely adopted a position that this exception is very narrow. Therefore, expanding this exception to a broader set of contracts, and thus eliminating the need to evaluate risk transfer, might not be viewed favorably by regulators or auditors.

Several authors addressed this question by defining which contracts should be tested:

- Goldberg's criteria were based on materiality considerations, retrospective elements to the contract, multiple year retrospective rating and an assessment of whether amount and timing risk are obviously present.
- Wenitsky's criteria were based on loss limitations or loss-sensitive features in quota-share agreements, or profit sharing, loss-sensitive premiums or other loss-sensitive or time-sensitive features in any agreements.
- Pastor's criteria were based on the ratio of aggregate limits to aggregate premiums or contract provisions such as retrocessions, side agreements, funds withheld, experience accounts, or limits on the timing of recoveries.

One author (Fell) pointed out that any loophole presents opportunity for abuse, and recommended reliance on professional actuarial judgment to determine which contracts should be cashflow tested.

## **Question 4: What are the advantages and disadvantages of the suggested approach versus other approaches commonly used?**

In this section, we provide a summary of views as to the advantages and disadvantages of the suggestions provided by the respondents for several of the more important points and considerations regarding risk transfer. These views include both those of the respondents, as well as those of the RTS as referenced below.

We would also like to provide several observations regarding the CAS Working Party's suggestion as to the use of ERD >=1% over the 10/10 rule:

- *Advantages*: Because ERD does not focus risk transfer decision on only one point in the reinsurer's loss distribution, it better addresses low frequency/high severity circumstances. Further, the ERD method, coupled with the supplemental test described in the CAS Report, addresses highly structured contracts that were designed to pass the 10-10 rule only marginally.

- *Disadvantages*: ERD may be perceived as a lower bar than the 10/10 Rule, since potentially more contracts would pass. However, many of these contracts, such as property catastrophe reinsurance, would presumably qualify for reinsurance accounting in that risk transfer is self-evident. Also, we understand that auditing firms are generally not accepting such approaches as of now. Further, it is still a binary approach, where the result is either 100% deposit or 100% reinsurance accounting; proponents of bifurcation may view this as a disadvantage.

According to Gluck, the following advantages of his suggested method were identified:

- Risk transfer is reduced to a simple single number with an intuitive meaning.

- Safe harbors for obvious risk transfer contracts are an integral part of the risk transfer definition, rather than exceptions.

- The approach is equally valid regardless of the relative amount of risk inherent in the subject losses.

- The approach is unaffected by profit margins and expenses. The approach avoids the second-guessing of the reinsurance pricing that is implicit in the FAS 113 definition.

Gluck did not enumerate any disadvantages. However, the RTS notes two potential disadvantages to Gluck's suggested approach. First, his proposal to re-evaluate the risk transfer percentage periodically may not be desirable or practical from an accounting consistency standpoint. Second, some of the reinsurance provisions identified as "structural" are common aspects of traditional reinsurance

According to Wenitsky, some of the advantages and disadvantages of his suggested method are as follows:

- *Advantages*: There is no arbitrary bright line beyond which risk transfer is achieved, and therefore the possibility of similar accounting benefit for dissimilar risk transfer is eliminated. It is sensitive to market conditions to the extent that the relative risk varies as those conditions change. It will create greater accounting consistency between cedants and reinsurers. The reinsurer and cedant may have different factors, but the differences will only be in degree. It fairly and consistently reflects the economic substance of transactions. It is only marginally more difficult to apply than current approaches.

- *Disadvantages*: Double accounting entries would be required for bifurcated agreements.

According to Belfatti, the advantages and disadvantages of his suggested method are as follows:

- *Advantages*: It eliminates the crucial "cutoff" element of current system and potential related incentive problems; the incentives caused by a "cutoff" system reflect most of the problem in today's system. It better reflects the underlying risk profile of a contract and therefore better aligns the substance of the contract with the depiction of it in financial statements. Provides significant safe harbors to avoid additional administrative complexity. Allows a great deal of flexibility in selection of metrics. Allows a great deal of flexibility in selection of the translation method to the "full risk" standard. The additional administrative burden of booking (twice the entries) could be viewed as a deterrent for doing these transactions.

- *Disadvantages*: It doesn't address the issue of little data and how the analysis could be adjusted for those situations. It still allows results that are very "model dependent." Still has the same implementation issues as today surrounding things like related contracts, interest rates to use, and reflection of non-cashflow aspects. Translation may produce counterintuitive results and/or some "cutoff" issues if not developed carefully. It still may allow for significant argument regarding which metrics should be used.

## Other comments made by authors

There were several interesting comments submitted on related topics, including:

- (Belfatti) "Risk is the potential for adverse changes in the amount or timing of the payment or receipt of cash, due to the occurrence of future contingent events...The emphasis on *potential* for adverse changes will ensure that it remains clear that not having a loss does not mean risk was not borne."

- (Fell) "As a result of FAS 113 and SSAP62, the accounting profession has been charged with ensuring that reinsurance contracts are accounted for properly. Whether intended or not, these accounting pronouncements have put the accounting profession in the driver's seat of not only ensuring that the accounting is correct but of evaluating whether significant risk exists in a contract. However, evaluating risk is the business of the actuary."

- (Fell) "I believe that arbitrary regulations have helped to fuel the use of finite reinsurance and correcting these regulations would lessen the need for some finite transactions. Most importantly, the NAIC developed the Risk Based Capital calculation to establish minimum capital requirements. It seemed at the time that this would lessen the reliance on the IRIS leverage tests, namely the premium to surplus ratio, to determine whether a company is writing too much business for their level of surplus. However, it seems that everyone still focuses on a 3-to-1 premium to surplus ratio regardless of the riskiness of the business written."

- (Koegel) "A concerted effort to narrow the disparity between current regulatory financial ratio thresholds on a gross vs. net of reinsurance basis may further facilitate achievement of a workable solution to narrow gaps that currently exist between the reporting and economic substance of certain reinsurance transactions."

## Hypothetical Reinsurance Examples

In order to provide a comparative illustration of several of the proposals described above, the RTS developed two simple examples of reinsurance contracts: a capped quota share and an aggregate excess of loss contract. We sent the examples to five of the authors, who applied their specific risk transfer evaluation techniques to these hypothetical transactions. The five authors and the suggested techniques are as follows:

| | **Belfatti** | **CAS** | **Gluck** | **Wang** | **Wenitsky** |
|---|---|---|---|---|---|
| **Risk Transfer Test** | Maximum of ratios of three risk metrics to derive a percentage of risk transferred | ERD must be > 1%, and maximum possible loss > 20% of subject premium to pass risk transfer | Ratio of risk metric to derive a percentage of risk transferred | Selected multiple of risk metric divided by ceded premium to get percentage of risk transferred | Ratio of risk metric to derive a percentage of risk transferred |
| **Risk Metric(s) used in Test** | Variance, conditional expected downside, downside variance | Variance, conditional expected downside, downside variance | Mean Square Adverse Deviation | Right-Tailed Deviation | Conditional Expected Downside |

*Quota-Share Example*

The critical features underlying the quota-share example are as follows:

- Expected Loss Ratio (ELR) = 70%
- Ceding Commission = 20%
- Payout Pattern = 100% paid immediately

- Loss Ratio Caps = 80%, 85%, 90%, 100%, and 110%
- Loss distribution is Lognormal
- Coefficient of Variation (CV) = 10% and 20%
- Reinsurer's share is 100%

The results by author are as follows:

**Percent Risk Transfer if CV=10%**

| Cap | Belfatti | CAS | Gluck | Wang | Wenitsky |
|---|---|---|---|---|---|
| 80% | 83% | FAIL | 0% | 0% | 0% |
| 85% | 93% | PASS | 61% | 3% | 76% |
| 90% | 98% | PASS | 90% | 6% | 95% |
| 100% | 100% | PASS | 100% | 7% | 100% |
| 110% | 100% | PASS | 100% | 7% | 100% |
| Unlimited | 100% | PASS | 100% | 7% | 100% |

**Percent Risk Transfer if CV=20%**

| Cap | Belfatti | CAS | Gluck | Wang | Wenitsky |
|---|---|---|---|---|---|
| 80% | 65% | FAIL | 0% | 0% | 0% |
| 85% | 68% | FAIL | 27% | 5% | 40% |
| 90% | 79% | FAIL | 50% | 9% | 65% |
| 100% | 91% | PASS | 75% | 16% | 89% |
| 110% | 100% | PASS | 95% | 21% | 97% |
| Unlimited | 100% | PASS | 100% | 26% | 100% |

Please note that the CAS Working Party uses a pass/fail test, whereby passing implies 100% risk transfer and failing implies 0% risk transfer.

As expected, all of the various tests assign a higher percentage of risk transfer as the loss ratio caps increase. In addition, with the exception of Wang, all of the tests assign a lower percentage of risk transfer as the CV assumptions increase. This is due to the fact that as the volatility of the business increases, the benefit of the loss ratio cap to the reinsurer increases since it becomes increasingly more likely that the cap will be exceeded.

The Wang method yields quite different results than the remaining methods, and it is interesting to note that it assigns only 7% risk transfer to an unlimited quota-share agreement on a book of business with a CV of 10%. The Wang method uses a ratio of Maximum Qualified Premium to actual ceded premium to determine the percentage of risk transfer, where the Maximum Qualified Premium is a selected multiple

of the downside risk as measured by the RTD. Since the Maximum Qualified Premium for quota share transactions is very small compared to the ceded premium, the risk transfer percentage is very small. In other words, the Wang method considers most of the premium ceded under a quota share, whether it is a capped or unlimited quota share, as "dollar trading."

Among the other methods, the CAS Working Party test appears to “pass” agreements with about a 90% or greater score on the Belfatti test. Of the remaining tests, the Belfatti test appears to yield the highest percentage of risk transfer for these examples, followed by Wenitsky then Gluck.

*Aggregate Excess of Loss Example*

The critical features underlying the aggregate excess of loss example are as follows:

- Subject Premium = $200
- Gross Expected Loss Ratio = 75.50%
- Retention = 80%
- Limit = 25%
- Ceded Premium = $12 (includes Reinsurer's Margin)
- Reinsurer's Margin = $5
- Profit Share of Experience Account is 100% (no investment crediting)
- Payout Pattern = 100% paid immediately
- Loss distribution is Lognormal
- Coefficient of Variation (CV) = 0.1638
-

Reinsurer's share is 100%

The results by author are as follows:

| Percent Risk Transfer | | | | | |
|---|---|---|---|---|---|
| Belfatti | CAS | Gluck1 | Gluck2 | Wang | Wenitsky |
| 100% | Pass | 69% | 92% | 100% | 73% |

Some critical notes regarding the above results are as follows:

- Gluck1 assumes the ceding company accrues the profit share asset.
- Gluck2 assumes the profit share asset is not accrued.
-

The CAS Working Party uses a pass/fail test, whereby passing implies 100% risk transfer and failing implies 0% risk transfer.

In this instance, both the Wang and Belfatti methods yielded scores of 100% risk transfer. The CAS Working Party test yielded a “pass”. Only the Gluck test was sensitive to the profit share asset accrual.

# CONCLUSION

It is our understanding that the CATF will evaluate this report and make recommendations to the Study Group in late August. We anticipate that the Study Group will discuss the CATF's recommendations and decide on their next course of action at the Fall National Meeting in September. As the CATF evaluates the items in this report and prepares recommendations to the Study Group, there are many items to consider and evaluate. COPLFR is available to assist the CATF and the Study Group in this evaluation process. Since our primary focus would be financial reporting and policy issues, we further encourage the CATF to consider the Casualty Actuarial Society as an excellent resource for further technical research in this area.

COPLFR has appointed a subgroup to develop a Practice Note on Risk Transfer Testing, in order to give high-level, non-binding guidance to actuaries who may be asked to assist in the evaluation of risk transfer. The Practice Note is anticipated to be completed in the fall of 2005.

The American Academy of Actuaries is pleased to have worked with the NAIC on this very important issue, and we would be happy to answer any questions or provide further information about the report. We would like to thank the members of the actuarial community who submitted ideas for the report. We also want to thank the RTS and CATF members who worked together on the project. They are as follows:

*Academy Risk Transfer Subgroup*

Nancy Watkins, FCAS, MAAA (Co-Chair)
Marc Oberholtzer, FCAS, MAAA (Co-Chair)
Ralph Blanchard, FCAS, MAAA
Holmes Gwynn, ACAS, MAAA
Anne Kelly, FCAS, MAAA
David Murray, FCAS, MAAA
Marvin Pestcoe, FCAS
Thomas Wallace, FCAS, MAAA
Scott Weinstein, FCAS, MAAA
Russell Wenitsky, ACAS

CATF Liaison Group

John Purple, FCAS, MAAA (Chair)
Larry Bruning, FSA, MAAA
David Dahl, FCAS, MAAA
Wendy Germani, FCAS, MAAA
Missy Greiner
Richard Marcks, FCAS, MAAA
Sarah McNair-Grove, FCAS, MAAA
Mary Miller, FCAS, MAAA
Rae Taylor, FCAS, MAAA
Kris DeFrain, FCAS, MAAA